

BUTANE-PROPANE

News

25¢

Behind the Lines, We've



It's a miracle of modern cooking efficiency. It's the kind of stove that women have anticipated for years. We can't show it to you, though . . . not right now. If you were to visit our plant today you'd see only implements of war rolling down our production lines. But the range is there...in the blueprints of our laboratory technicians as they develop—under the stimulus of war-time production—amazing new features for the Grand Range of tomorrow. And when the last shot has sounded on the firing line and it's time to start building implements of peace again—we'll be ready. For, behind the lines, we've got the range.

*When Peace Comes,
It Will Be GRAND*

Grand Gas Ranges

DIVISION OF THE CLEVELAND COOPERATIVE STOVE COMPANY
CLEVELAND, OHIO

JANUARY 1943

In Two Sections . . . Part I

★
Time-tested dependability and satisfactory performance are provided by Hackney L-P Gas Cylinders.

★
Hackney Special Cold Drawing Process assures uniform sidewall thickness and further is a test of the quality of the steel itself.

★
Foot ring, with bottom edge curled inward, is attached by means of offset in bottom of cylinder. Shocks are absorbed without danger to cylinder.

★
Combination spud, threaded to receive steel valve protecting cap and valve, is designed to assure free drainage when cylinder is inverted.

★
Continuous trouble-free service is made possible by heat-treatment of finished cylinder.

★
Two seamless shells are joined at mid-section with SINGLE circumferential butt weld. Hackney welding is X-ray controlled.

Hackney Cylinders are perfectly balanced between light weight and adequate strength.

Why Hackney cylinders are better cylinders

These and many other advantages are the results of years of experience in working with all types of metals, a competent use of modern manufacturing equipment and facilities and extensive research. Today, while there

are restrictions on metals for other than war products, there are no priorities on knowledge, skill, imagination and Hackney interest in product improvement. These are continuing. These are your assurance of the continued superiority of Hackney cylinders.



PRESSED STEEL TANK COMPANY

General Offices and Plant: 1487 S. 66th St., Milwaukee, Wis.

Containers for Gases, Liquids and Solids

INSURE YOUR GAS SUPPLY

AN ALGAS UNIT ON YOUR PREMISES—similar to the installation shown here at Continental Can Corporation—is your "own public utility"—

GUARANTEEING UNINTERRUPTED PRODUCTION. Use it as your permanent source of gas, or as a stand-by—in an emergency switching from public utility gas to the Algas Unit.



"Think

American"

AMERICAN LIQUID GAS CORP.

1109 SOUTH SANTA FE AVE.
LOS ANGELES, CALIF.

JANUARY-1943



BUTANE-PROPANE *News*



Reg. U. S. Pat. Off.

Contents for January 1943

Letters	4
Guest Editorial: Balance <i>By A. T. Scherer</i>	7
Mainly Beyond the Mains	9
1942 In Review <i>By Elliott Taylor</i>	12
Industry Marches to War Tempo <i>By G. G. Oberfell</i>	18
How to Price Under OPA Service Regulations	27
Oil Pressure Maintenance Plant Will Boost Recovery of Butane and Propane	29
The Bottled Gas Manual—Chapter 16 <i>By C. C. Turner</i>	30
Research	47
More Hydrocarbons Needed for War	51
Classified	70
Advertisers	72

Publication Office

Los Angeles—1709 West Eighth Street. Phone: DRexel 4337.

Branch Offices

Dallas, Texas—3645 Haynie Avenue. Phone: Justin 8-1764.

Chicago—1064 Peoples Gas Building. Phone: HARRison 6634.

Washington—Editorial Office, 850 Munsey Bldg. Phone: District 2118.

JAY JENKINS, President and General Manager.

CRAIG ESPY, Vice President. ARTHUR ROHMAN, Vice President.

JAMES E. JENKINS, Secretary-Treasurer.

LYNN C. DENNY, Managing Editor. ELLIOTT TAYLOR, Washington Editor.

HAROLD P. WICKSTROM, Technical Editor. J. BREWER AVERY, Research.

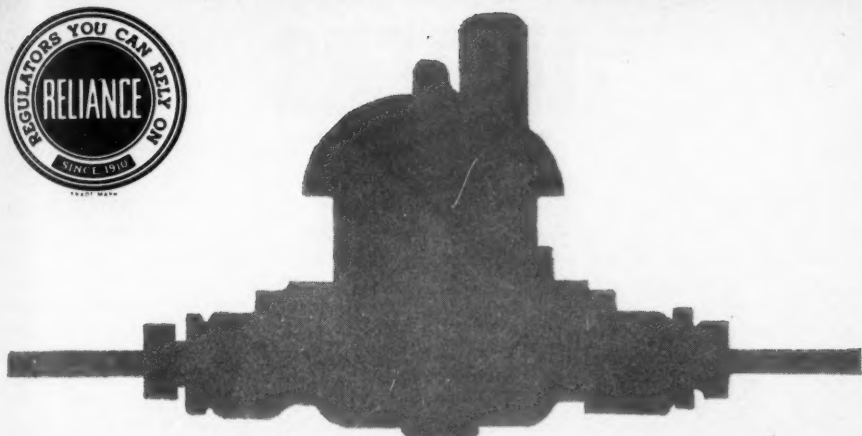
PAUL F. LADY, Advertising Manager.

January, 1943. Volume 5, Number 1. BUTANE-PROPANE *News* is published monthly. Copyright 1943, by Western Business Papers, Inc., at 1709 West Eighth Street, Los Angeles, California.

Subscription price: United States, Mexico, Cuba, South and Central American countries (in advance), 25 cents the copy, one year \$1.50; three years for 2.50; all other countries \$3.00 per year. Entered as second-class matter May 29, 1939, at the post office at Los Angeles, California, under the Act of March 3, 1879.

Member Audit Bureau of Circulation; Associated Business Papers, Inc.

Publishers: G A S, The Natural Gas Magazine; HANDBOOK BUTANE-PROPANE GASES.



RELIANCE REGULATORS

Assure Uninterrupted Service
for Liquid Petroleum Gas Appliances

PIONEERS
IN THIS
FIELD

Reliance Regulators are available for large and small installations with automatic control of multiple cylinder assemblies. They are safeguarded by a safety seal. Two-step reduction eliminates the possibility of high pressures getting into the appliances.

Reliance Regulator Corporation, 1000 Meridian Ave., Alhambra, Cal.

JANUARY-1943

LETTERS

Gentlemen:

We are desirous of ascertaining whether gas that we have in a 100-lb. cylinder is propane or a mixture of butane and propane.

We would appreciate it, therefore, if you could advise us as to the best way of obtaining this information.

D. B. R.

Florida

For a rough check put a pressure gage on the outlet connection. Determine the approximate temperature of the liquid in the bottle by wrapping a thermometer on the side of the tank. After the temperature reading has become constant, read the temperature and pressure. Add 14.7 to the reading of the pressure gage to get absolute pressure.

Refer to Page 24 (Fig. 4) Handbook BUTANE-PROPANE Gases, 2nd Revised Edition, and an approximate blend can be determined. We see by our records that you also have the 3rd Edition of the above named handbook and the reference there would be to Page 45, Fig. 4.—Ed.

Gentlemen:

We are enclosing our check in the amount of \$18.75 to cover our purchase order for 25 "WPB Gas Flow Orifice Calculators."

We would appreciate receiving these as soon as possible as we plan on giving them to servicemen in our organization and to some of our dealers' servicemen.

Ernest Fannin

Fannin's Gas & Equipment Company
Phoenix, Arizona

Gentlemen:

I want to give you my sincere opinion of your "WPB Gas Flow Orifice Calculator." It is the first practical thing of this nature I have seen and

I have had a lot of fun with it. I use it to check my own calculations when I am computing tables for "The Bottled Gas Manual" and upon other occasions in my work. Its advantages are simplicity, low first cost, self-contained unit. Your calculator should be in the hands of every man in the entire LP-Gas industry. My congratulations upon a needed job excellently done!

C. C. Turner

Portland, Maine

Gentlemen:

Your November copy, on page 38, "Machinery Plant Using Butane Meets Natural Gas Competition" has a number of "near-misses." It all depends upon where the natural gas is delivered—for example in Atlanta area, butane delivered runs about 7 cents per gal., or relatively 7 cents per 100 cu. ft. natural gas. The gas engine rate is right much less than that, exclusive of cost of butane installation. Oil-fuel diesel engines operate more economically than butane here on cost per h.p., where natural gas is not available.

In the matter of burying the tank, I found that underground storage, on heavy demand as indicated, will "sweat" and in winter may "ice." I found such a condition on a 500-gal. tank with a demand of 7 gals. per hour. It was 30 in. in the clear underground and during the winter of 1939-40 I superintended the job of pulling this tank out. There was a 10-in. coat of clear ice around this tank. When brought to the surface and using a 5-section Clow Gasteam

radiator, after picking the ice off, and in freezing weather, the service on the same demand was good down to 30 gal. in the tank. Formerly there was no pressure and the tank contained 300 gal. of butane.

I also think the figure of 90 gal. per hour at rating of the engine is too low; 110 gal. would be nearer at engine rating, and maybe more if the load is uneven.

E. Roy Taylor

Atlanta, Georgia

Gentlemen:

Do you plan to publish "The Bottled Gas Manual" as printed in the BUTANE-PROPANE News in book form. What will be the cost and when will it be on the market?

E. F. D.

Guymon, Oklahoma

It is our intention to publish in book form "The Bottled Gas Manual." However, it is likely that the book will not be printed until next year as the manual still has about one year to run serially in BUTANE-PROPANE News before it is completed. The cost of the book has not yet been determined. Prior to publication, ample notice will be given readers of our magazine.—Ed.

Gentlemen:

We are a new subscriber to your publication, and we were just wondering if you happen to have any information in your files showing the results of operations of any municipal gas systems in the United States. We have been trying to find out just where we could go to get such information. No doubt, somebody in your industry either has such information, or knows where this information could be obtained. If operating figures on municipally operated gas systems are not available, would it be possible to obtain a list of cities and villages in the United States that operate municipal butane or propane gas systems.

We know of several such systems

operating in the Middle West, and with good success. However, we would like to enlarge our list if possible and if you can help us out any way we would be very grateful to you.

R. S. J.

Minnesota

In the Second Revised Edition of the Handbook BUTANE-PROPANE Gases, published by us, there is a section devoted to all the town plants in the United States established up to and including 1938. That list is too lengthy to include here but the following name of municipal plants may be helpful. Any of them will be able to give you a great deal of information:

Alexander City and Union Springs, Ala.; Palo Alto, Calif.; Sebring, Fla.; Bushnell, Ill.; Mount Vernon, and Plainfield, Ind.; Emmetsburg, Iowa; Two Harbors, Minn.; Central City, Neb.; Paulsboro, N. J., and Kerrville, Texas.

In the October issue of BUTANE-PROPANE News, starting on Page 38, will be found an article describing the town plant located in Kerrville, Texas, which gives many details of operation.

Also you will be interested to know that there are located on the Pacific Coast four firms which have specialized in installing butane-propane town plants. They are: American Liquid Gas Corp., 1109 Santa Fe Ave., Los Angeles; Ransome Co., Emeryville, Calif.; Gasair Corp., 155 Sansome St., San Francisco; Parkhill-Wade, 1625 South Alameda, Los Angeles.—Ed.

Gentlemen:

Ours is a comparatively new company in the bottled gas industry, and we are happy to say that we have obtained many benefits from BUTANE-PROPANE News. Every employee looks forward to its arrival each month. The publication is an excellent "informer and teacher."

D. L. Ward

Manager

Iowa Automatic Gas Co., Inc.

Early, Iowa

- BUTANE-PROPANE News welcomes letters from our readers, but it must be understood that this magazine does not necessarily concur in opinions expressed.—Editor.



A. T. SCHERER

Guest Editor for January

Balance

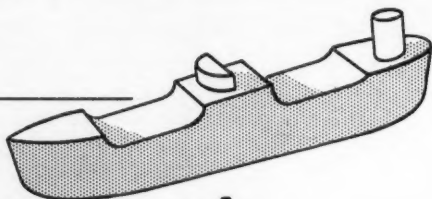
By A. T. SCHERER

Sales Manager, Sinclair Prairie Oil Company, Tulsa, Oklahoma

OUR LP-Gas industry was well launched by 1929 and going full speed, under its own power, as an independent unit of the natural gasoline industry by 1939. We are no longer an infant industry, or subject to adolescent misconceptions, but rather fully aware of having accepted the adult responsibility of supplying the fuel for war industries, army and navy cantonments, ordnance works, shipyards and many other projects outside of our long-pull obligation to thousands of home owners all over the country depending upon us for their daily fuel requirements.

Of course, we shall grow in both stature and girth as we grow older, but the consciousness of our responsibility is thoroughly developed, as of today, and when synthetic rubber and aviation gasoline and other new or unforeseen processes require additional butane and propane charging stocks, our facilities will be expanded to meet these requirements. We must continue to protect our current war production and domestic commitments, and not expect to slice steaks from the same cow that now provides our milk.

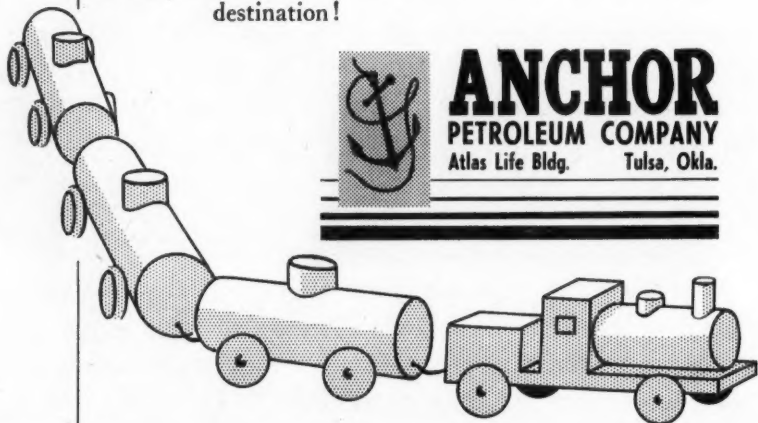
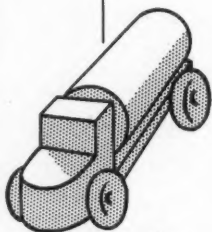
We believe that men and steel will be available to expand tank car and tank truck facilities necessary to move our increasing production, and pledge our industry to a forward vigilance against any imbalance.



We Pause

long enough to express profound appreciation to our friends . . . to be proud and thankful that we are Americans . . . and to renew Anchor's pledge to continue bringing cheer and warmth to American homes, and Anchorgas fuel to American factories.

We cast anchor long enough to say "Thank You!" and "Season's Greetings!" . . . but it's "anchors aweigh!" for the new year, and full speed ahead, to keep Anchorgas rolling to its destination!



ANCHOR
PETROLEUM COMPANY
Atlas Life Bldg. Tulsa, Okla.

MAINLY BEYOND THE MAINS

LP-Gas Comes of Age

Our regular annual estimate of the amount of LP-Gas sold during the past twelve months has been completed, and is presented on pages that follow in this issue. Unlike the estimates of previous years, we recognize that this year's figures bear little relation to the realities of the future. Any trends, any predictions must now be reconciled with the greatest unpredictable of all—the fact of war.

There are sound reasons for satisfaction in contemplating the work and the progress of the LP-Gas industry in the year that has just closed, however. In the first place, neither the supply nor the delivery has faltered or failed at any important point, or to any significant degree. Then, too, to a degree that never before existed, we are convinced that the status of LP-Gas as a major fuel has been firmly and permanently established.

Crazy prejudices against butane and propane, assiduously fostered by our enemies and furthered by the uninformed and careless even among our friends, have all been eliminated. LP-Gas is no longer an interesting novelty to the refining industry, an irritating local nuisance to the manufactured gas companies, a presumptuous upstart to the

electrical competition or a dubious makeshift to large scale users of industrial heat and power.

LP-Gas stands today, at the beginning of 1943 as a recognized source of heat and power unrivalled for many purposes and in many localities. Far from being a refinery by-product, it is now the object of plans and programs looking to the expansion of its production. To both manufactured and natural gas utilities it has proven a Godsend as a standby gas and as a substitute for either manufactured or natural gas where the supply has proven inadequate to meet wartime peak demands.

In questions involving the consideration and selection of fuel for a new installation, LP-Gas is now, more than ever before analyzed on an impartial and scientific basis. Where it is the best fuel available for the job, it has been given the job. There has also been a gratifying absence during the past year of the underhanded competitive methods that once marked the activities of the electrical and coal competition.

It can be said this January, more truly than at any time in its history, that LP-Gas as an industry has come of age, and having reached man's estate has been quick to accept the obligations of its majority. Now more

than ever before in the short history of this industry, we believe that the future is assured; we fight shoulder to shoulder and as a peer with all other fuels, and we await only the return of normal times for a continuation of the phenomenal expansion that has marked our progress during the past decade.

The Month

The appointment of former Petroleum Coordinator for War, Harold L. Ickes, as Petroleum Administrator for War means in effect that instead of being an advisor, authorized only to make recommendations, the newly created Administrator is empowered to order and compel action within the scope of the definitions and limitations of the order.

The order is broad in its scope as far as defining the petroleum industry is concerned, excluding only the transportation of petroleum, the transmission of natural gas in main lines and the distribution of natural gas.

What significance, if any, this new designation will have to the LP-Gas industry cannot be accurately predicted, since it is specifically provided in the Executive Order that "no directive issued . . . shall conflict with any direction that may be issued by the Chairman of the War Production Board . . ." At present the LP-Gas industry is buried in a niche in the WPB organization as a Unit of a section of a Division. The very nomenclature

that has been employed in its assignment to the Fuel Burning Equipment Section of the Plumbing and Heating Division is an indication of the unreality with which WPB looks upon LP-Gas. By what conceivable stretch of imagination could the merits of an application for an industrial installation like that of the A. O. Smith Corp., for instance, that may use up to a million and a half gallons of LP-Gas per month, come within the frame of reference of the plumbing and heating industry?

It is fortunate, of course, for the LP-Gas industry, for the WPB and for the whole war program that the cooperation between OPC and WPB has been close and intelligent. By reference to OPC on every question other than those involving critical materials for equipment to install or to burn the gas, the WPB has managed to avoid any serious blunders where the availability and location of the gas supply rather than the amount of copper or steel needed for its installation was the paramount factor.

Now, however, we are approaching a situation in the middle west, that may soon be evident in other sections, where the transmission facilities for natural gas are in danger of proving inadequate for the combined war and winter peak loads. Already the WPB Power Division has ordered standby facilities in the Chicago area used to full capacity to avert a possible natural

gas shortage. Much of this standby in essential war industrial plants is propane; only the OPC, or as it is now known, the PAW, is competent or has available the facts on which to decide which threatened shortage is the most imminent. It is only common sense to assume that the sole agency competent to decide which fuel shall be used, should also be the agency to decide which fuel should be installed in the first place.

We believe that no executive order would be necessary to transfer bag and baggage the entire personnel and function of the LP-Gas Unit out of WPB and into the offices of the PAW. If the acquiescence of Donald Nelson, or any of his subordinates in WPB were necessary, we are convinced such acquiescence would be withheld only in those instances or in those quarters where personal ambitions of individuals might be thwarted. And we submit that this life and death struggle in which we are now engaged does not recognize the validity of any man's personal ambitions.

It is our earnest hope that the new executive order, creating a Petroleum Administrator for War will provide the impetus for an orderly and harmonious transfer of all jurisdiction over LP-Gas as a fuel from the WPB and into the capable and informed offices of the PAW.

★ ★ ★

The Army's gain in calling into active service with the rank

of major, Franklin R. Fetherston, is distinctly the liquefied petroleum gas industry's loss.

Not many men in the industry would care to lay claim to as broad a knowledge of LP-Gas in all of its ramifications, technical, economic, political, and emotional, as that possessed by Frank Fetherston. From the time of original organization of the National Bottled Gas Association, which was formed in the fall of 1931, he has served not only as secretary-treasurer, but as main-spring, pivot and balance wheel of the best organized segment of the industry.

It would appear that it must have been inevitable that one day the Association's secretary would be in active service with the armed forces of the nation. His devotion to the national welfare was evident at the time when careless citizens were still content to render it only passing lip service. His firm conviction that the LP-Gas industry should conform to the spirit of the new emergency laws and regulations as well as obey their letter, set the tone that ultimately prevailed throughout the whole industry.

The understanding and appreciation of the magnitude of the LP-Gas industry, and of the scope and ramifications of its services that he has been instrumental in imparting to the war agencies of the government have already borne fruit. These good works will continue to bear fruit in his absence.

1942 In Review--- *Demands of War Bring High Industrial Gains*

By ELLIOTT TAYLOR

Washington, D. C., Editor, BUTANE-PROPANE News

ALL-OUT war conditions of operation closed in on the LP-Gas industry early in 1942, and they closed in fast. On Jan. 14 the now famous freeze order on installations involving petroleum products, M-68-c, was issued and interpreted to include butane and propane. The fact that the order had been drawn to prohibit the use of critical materials in gasoline dispensing installations made little difference since its wording was so inclusive that it automatically ended all new installations of LP-Gas for either domestic or industrial purposes unless the proposed installation could be shown to be essential in some way to the prosecution of the war.

At just about that time any discussion of the role of LP-Gas, and particularly of butane in the war economy, usually ended in the prediction that once the high octane and the synthetic rubber programs got into full swing butane would be almost impossible to obtain for the thousands of domestic and the non-essential industrial accounts



ELLIOTT TAYLOR

that were using it as their principal or sole fuel supply. Propane was regarded as being less in danger as to supply, but since the transportation facilities required to handle the butane were expected to absorb practically all of the high pressure rolling capacity of the entire country, it appeared that propane, too, might have to be seriously curtailed, if not abandoned, for any but essential uses, except in areas within a short tank truck haul from some cycle plant or refinery.

Adding to the confusion that prevailed during the first two months of Order M-68-c was the fact that the legal counsel of some of the larger refiners ruled that it did not apply to LP-Gas, and that the official interpretation of the order was held up while government attorneys jockeyed their semicolons around and refused to give an immediate and final answer on its scope. In the meantime those companies that had benefit of legal advice favorable to their desires in the matter continued to make installations, and only those who were willing to take the informal word of the OPC or the advice of the LP-Gas Association immediately ceased all expansion operations.

This state of affairs continued

until Feb. 14 when the chief counsel of OPC advised the LP-Gas Association that the order did apply to LP-Gas marketers.

This seemed to settle definitely the question of both the intent and the interpretation of M-68-c and the industry thereafter generally accepted and abided by its restrictions. However, on March 23 M-68-c was reissued by WPB; and the new order specifically released from the terms of the order the restrictions placed on equipment for the distribution of "butane, propane, propylene, butene or any combination or dilution thereof."

It was generally understood that

a new order to cover LP-Gas was to be issued immediately after the revision of M-68-c, but after several days passed without any order being forthcoming, rumors and tips regarding its probable scope and the reasons for its delay became so thick and so conflicting that many factors in the industry felt justified in resuming new installations of service in the absence of any order to the contrary.

It was not until April 8 that the WPB issued its formal limitation order known as L-86, which is still in effect and which closed the door then and for good on any new installations except those that were



The compressor plant, absorber and Fluor cooling tower on the Indiana side of the Wabash river, which represents the second section of the new manufacturing plant of the Warren Petroleum Corp. at Crossville, Ill., where propane and butane are made.

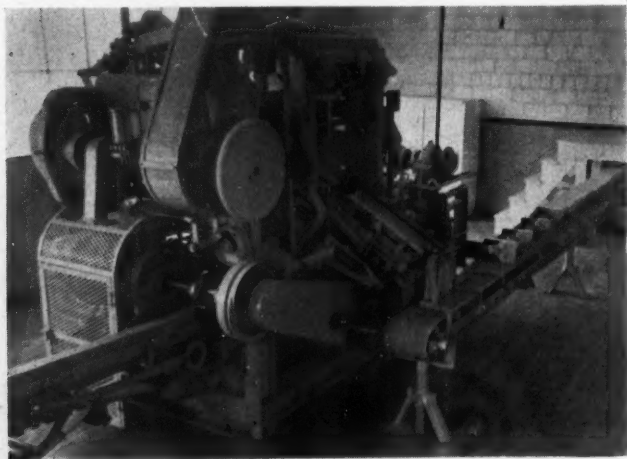
"necessary and appropriate in the public interest and to promote the war effort." The now well known PD-397 form became the only door through which a new installation could be squeezed, whether it was the biggest industrial job or the smallest residential installation.

We have felt it necessary to preface our estimates of the 1942 market sales of LP-Gas with this rather lengthy statement to avoid possible misinterpretations that might originate in either industry or government. In the first place, for the protection of the industry we believe it advisable to incorporate in the record, based on the results of our own spot checks, the periods and the circumstances under which new installations were legally possible without the permission of any agency of the government. In the second place, to avoid creating the impression throughout the industry that PD-397 applications had been lavishly allowed in some sections or to some operators,

while denied to others, we desire to make it clear that our estimates of new installations, and particularly of new domestic installations, do not in any degree conform with the number of PD-397's allowed.

Neither the Liquefied Petroleum Gas Unit of the War Production Board nor any member of its personnel has cooperated in any way to make available to the industry the figures on which these estimates are based. And while we are not in any sense in accord with the policy of the WPB in thus withholding from industry the facts on its operations, we have deferred without protest to its decision and gone elsewhere for our information.

It will be noted also in the survey that questions regarding the volumes of LP-Gas now being diverted into the manufacture of synthetic rubber and into the expanding 100-octane gasoline program have been touched on only to the extent that the possible increased demands for gas for these



▲
The "tight wrapper" machine of the Gerber Food Products Co. plant, Fremont, Mich., where propane is used in the cylindrical rotary toasting ovens.
▼

purposes may have an effect on the future availability of these two gases for domestic, commercial and industrial purposes. Figures which are common property, having been publicly released by the Bureau of Mines, indicate that the production of LP-Gases, including isobutane, is far in excess of the gas delivered through sales to the industry and to large scale industrial users of heat. For the first nine months of 1942, for example, enough gas was produced to indicate that the total year's output might be expected to reach one billion gallons; yet, on a careful summation of all of this gas that went into the established LP-Gas distribution channels, for all normal uses, the entire market consumption does not appear to be in excess of 604,588,000 gal., or approximately 60% of the production.

Many Breakdowns Cannot Be Made

What may have happened to the balance, what portion of it was utilized for synthetic rubber, the amount that was required for the aviation gasoline program, and the volume of deliveries going into exports or on direct contract to the armed forces, would constitute breakdowns that in our estimation cannot readily be made, and should not be released for public consumption where the ever alert eyes and ears of the enemy might profit by their study.

As might be expected, the high percentage increases in domestic consumption that have been maintained year after year have fallen off sharply in 1942. Whereas the official Bureau of Mines figures showed domestic consumption in



W. H. Knight of W. H. Knight Poultry Farms, Krum, Texas, adjusts a control on one of his egg incubators.

1941 to have been 65% above the 1940 level, we find that for 1942 the total figure for all domestic requirements, such as cooking, water heating, space heating and refrigeration was only about 8.6% above that of 1941. Since the avowed purpose of the WPB has been to curtail all new expansion of service, the percentage above shown is no better or no worse than might legitimately have been expected under war conditions.

The actual number of new consumers introduced to LP-Gas service during the year is, of course, the lowest in point of percentage for any year since the industry began its march of expansion in 1935. New dwelling units using LP-Gas increased only 3.4% for the year 1942 over 1941, in comparison with the the 1941 over 1940 increase of approximately 40%. (See Table 1.)

It is in the industrial field, in which classification we include sales

of butane and propane for all manufacturing, heat treating, internal combustion engine, gas manufacturing, enrichment and standby service that the highest gains have been registered. Here we see an increase of 52% over 1941 in the amount of gas used for these purposes. To the same extent that these manufacturing processes using LP-Gas followed the course of all industries during the year, it is a safe assumption that by the end of December practically all of this fuel going into any industrial process was in some way or other contributing to the successful prosecution of the war.

Gas Supply Has Been Adequate

It is a noteworthy fact that nowhere over the entire country was there any major breakdown of the delivery of gas to any and all

essential civilian as well as war service. The supply of gas has remained adequate on the average at all points, and even the critical transportation difficulties have so far been more anticipated than experienced. New technical approaches to both the synthetic rubber and the high octane programs have apparently, and for the time being, eased the danger of any major shortage of butane.

Transportation Is a Problem

The future, as respects transportation, however, is not to be regarded with undue optimism. There are now about 1850 tank cars in the service of LP-Gas, representing an increase of about 400 over those in use a year ago. Some of these have been converted from other services, and others have been built during the year 1942. The turn-

TABLE 1. ESTIMATED MARKETING PRODUCTION OF BUTANE, PROPANE AND BUTANE-PROPANE MIXED GASES

	1941	1942	Increase or Decrease Percent
New domestic installations by dwelling units added during the year	380,000	60,000	84.4 D*
Total number of domestic installations in service at the end of the year	1,780,000	1,840,000	3.4
Sales, gallons for domestic consumption	220,722,000	239,736,000	8.6
Sales, gallons for industrial, internal combustion, gas manufacture, standby, chemical.....	242,130,000	363,748,000	52.0
Total sales, gallons.....	462,852,000	604,588,000	30.6

D* Indicates decrease in percent.



A service man assembling an underground butane system for a domestic installation in Oklahoma where tanks are frequently buried.

around per car has been increased from an average of $2\frac{1}{2}$ per month to about $2\frac{3}{4}$. This on the face of it should insure adequate transportation for 1943, were it not for two factors that must be taken into account.

Shipments 30% Higher in 1942

In the first place 253 of the new cars, which are part of an order built for the Defense Plant Corp., are on lease to LP-Gas carriers only until such time as they are required for the synthetic rubber program, at which time they can and undoubtedly will be immediately placed in service hauling butadiene, the purpose for which they were intended. Secondly, as far as transportation is concerned, isobutane capacity at natural gasoline plants and 100-octane refinery

facilities are being completed as rapidly as construction schedules can be pushed. There may be a period when certain components of aviation gasoline are available at one location, while others may have to be transported from considerable distance before the finished product can be turned out. Where any expansion in the transportation requirements for isobutane is encountered it is more than possible that some of the existing propane cars will be pressed into service for the purpose. Shipments by tank car for 1942 were over 30% higher than those for 1941, and it is now anticipated that for the first quarter of 1943 these shipments may run up to 45% over those for the corresponding quarter of the year that has just closed.

Industry Marches to War Tempo

Marketed Gallonage Passes Half Billion Mark as New Accounts in '42 Bring Total Users to 1,825,000

By G. G. OBERFELL

Vice President, Phillips Petroleum Co., Bartlesville, Okla.

IN 1942 the liquefied petroleum gas industry enlisted for the duration.

Normal expansion of business in the domestic field was halted by Government order in January and by April all activities were brought under Government supervision and restricted to war and essential civilian projects. The abrupt halt in domestic selling activity came as the first real retarding influence in an industry which had been growing at an average rate of well over 30% per year in good times as well as bad.

Industrial demand was severely curtailed early in the year when normal peace-time manufacturing operations were abandoned while many plants were being tooled for war production. As soon as conversions were completed the industry was called on for greatly increased deliveries. In the fourth quarter particularly, the completion of new war plants built since the



G. G. OBERFELL

attack on Pearl Harbor has increased demand for liquefied petroleum gases at a greatly accelerated pace.

For the year as a whole it is estimated that marketed production of liquefied gases totaled 548,000,000 gal., an increase of 19% over 1941. This is the smallest percentage increase in demand since 1938. In 1941 the increase was 47.7%, in 1940 the increase was 40.2%. The convenience of liquefied gas for domestic use and the many advantages of this type of fuel for manufacturing operations had been so well sold by the industry that 1942 demand undoubtedly would have exceeded 600,000,000 gallons had it not been for the restrictions made necessary by the war.

It is estimated that 125,000 new domestic consumers of liquefied petroleum gases were added in 1942 despite the cessation of selling activity. A greater part of these were added early in the year before the industry was restricted. In 1941 there was an increase of 520,000 users. Some new installations have been made throughout the year at war housing projects. Total number of domestic consumers at the end of the year is estimated at 1,825,000.

TABLE 1. MARKETED PRODUCTION OF LIQUEFIED PETROLEUM

Year	Total Sales		Distribution—Gallons Per Year					
	Gallons per Year	Per Cent Increase Over Previous Year	Domestic	Per Cent Increase Over Previous Year	Industrial and Mis- cellaneous	Per Cent Increase Over Previous Year	Gas Manu- facturing	Per Cent Increase Over Previous Year
1933	39,931,008	14.1	16,625,588	2.3	13,987,095	71.3	8,318,325	-14.3
1934	56,427,000	44.9	17,681,000	6.3	32,448,000	132.0	6,298,000	-24.3
1935	76,855,000	36.2	21,380,000	20.9	47,894,000	47.6	7,581,000	20.4
1936	106,652,000	38.8	30,014,000	40.4	67,267,000	40.5	9,371,000	23.6
1937	141,400,000	32.7	40,823,000	36.0	89,402,000	32.9	11,175,000	19.3
1938	165,201,000	16.7	57,832,000	41.7	94,983,000	6.2	12,386,000	9.8
1939	223,580,000	35.3	87,530,000	51.3	120,615,000	27.0	15,435,000	24.6
1940	313,456,000	40.2	134,018,000	53.1	159,153,000	32.0	20,285,000	31.4
1941	462,852,000	46.5	220,722,000	65.0	216,875,000	35.8	25,255,000	24.4
1942	555,000,000	20.1	265,000,000	20.0	262,400,000	21.0	27,600,000	9.3

Table 1 gives details of liquefied petroleum gas demand by major types of use in 1942 compared with previous years. This tabulation does not show the volume of liquefied gases used in the production of aviation gasoline or synthetic rubber. Consumption at chemical plants, served by pipeline with hydrocarbons in a gaseous state, has not been included. An effort has been made to eliminate duplications where products have been re-sold to others.

Utilization of liquefied gas fractions at oil refineries for the production of aviation gasoline has increased rapidly during the past year. If these fractions were included in this report the total consumption of liquefied gases would have shown an even greater increase than in recent years. An increasing volume of normal butane is moving to isomerization plants. Isobutane is being segregated wherever possible for alkylation with unsaturates to produce 100-octane aviation gasoline.

Propane supplies at refineries have been affected by the segregation of propylene for cumene manufacture. At many plants isomers and unsaturates are being removed from ordinary motor fuel and the volatility is being restored by the use of normal butane. Some propane has been blended with motor gasoline to increase volatility in emergencies when butane supplies were low.

As the national synthetic rubber program which is based on the utilization of C4 cuts gets into full swing in 1943, the liquefied petroleum gas industry is expected to continue its recent trend of placing more emphasis on propane. In 1942 propane consumption for normal LP-Gas uses increased much more rapidly than butane.

Oil refiners are using greater quantities of propane in lubricating oil manufacture. Recently, it was stated that propane now is used to improve the quality of more than half of all lubricating oils produced. Volume used for this particular

purpose is relatively small when compared with total propane production but in the aggregate such small uses have an important effect on total demand.

LP-Gas Supplants Other Fuels

Shortages of other fuels have had a substantial effect on the demand for liquefied petroleum gases in 1942. The tremendous increase in the demand for acetylene has created a shortage of that gas with the result that the use of propane for metal cutting has increased to a remarkable extent. More shipyards and other fabricators of steel sheets and plates have been using propane for cutting and saving acetylene exclusively for welding.

The manufacture of small caliber ammunition, shell cases and bombs ranging in size from the 250-lb. variety to the recently developed "block busters" has taken an increasing volume of liquefied petroleum gases in 1942. In the manufacture of small caliber ammunition the fuel is used primarily for annealing of non-ferrous metals. A separate annealing operation at 1100°F. to 1350°F. is required after each of a series of operations in forming the cases. The noncorrosive features of sulfur-free liquefied gases make them valuable in non-ferrous metal processing.

Work done on large size shells is similar to that required on forgings. The bare stock is heated to 2000°F. or higher before going to the presses. Manufacture of bombs depends on the size and type but in all cases carefully controlled heating operations are required and manufacturers have found that

liquefied petroleum gases are highly desirable as fuel due to purity and ease of accurate control.

Butane-propane mixtures are being used in mining machinery in the greatly enlarged operations of the nation's iron mines. Mine operators have been employing Hesslerman engines as prime movers on new machines. At one mine employing such engines remarkable service records have been achieved. Trucks hauling 15 tons of ore per trip up 8% grades have operated 9000 hours without stops for maintenance. It was necessary to change lubricating oil only once every 1000 hours on these units. An overall increase in efficiency of 20% has been achieved after conversion to liquefied gas fuels.

Army Camps Are Big Users

Army camps are large users of both propane and butane for cooking and water heating. One California camp not adjacent to natural gas service uses 20,000 gal. daily of liquefied gases. Hospital sterilizers designed originally for natural gas are using LP-Gas when installed at army camps. Small war vessels of the corvette type use bottled gas for cooking.

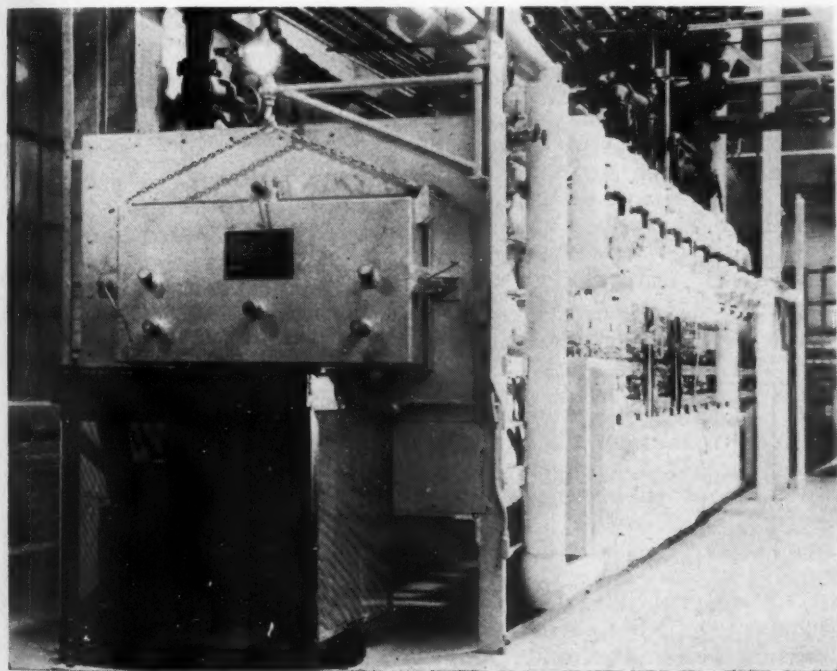
Experimental work has been conducted in the use of liquefied gases to replace high octane motor fuel in the testing and running-in of high compression aviation engines. The work was undertaken because the use of such gases would release substantial quantities of high octane gasoline for actual flying operations, particularly in the pilot training program. Work also has been done in the experimental

use of such gases for cold-weather starting of airplane engines and partial use during the warming-up period. Since butane has an octane rating of about 90 and propane a rating of over 100 octane, the fuels meet the most important characteristics required of an aviation fuel. Flight use is, of course, not being considered due to the container weight.

Prospective shortages of natural gas during peak-load periods in certain areas has created a large demand for stand-by installations since the declaration of war. Government agencies have urged some

manufacturers of critical materials to install stand-by storage and gas diluting equipment so that in case of natural or manufactured gas failure the plants will not be required to suspend operations.

From the standpoint of the liquefied gas industry the stand-by plants are a problem because prospective refills of storage will come during the winter months when the domestic heating load and normal industrial consumption is at its peak, particularly for butane-propane mixtures. Initial loads can be supplied readily but a sudden influx of a large number of refill orders



Spark plugs for army jeeps are fired in this kiln which utilizes liquefied petroleum gases as fuel. Large numbers of similarly built annealing ovens using liquefied petroleum gas are employed in producing small arms ammunition and "block buster" bombs.

might prove embarrassing. Likewise, stand-by installations require large amounts of hard-to-obtain steel storage capacity which could otherwise be working every day in plants where liquefied gas is used as the regular fuel.

Transportation of Vital Concern

Transportation has been perhaps the most important single factor interfering with smooth operation of the industry during the past year. The lack of tankers for transportation of crude oil to the east coast which created the gasoline and fuel oil shortage likewise affected the eastern supply of liquefied petroleum gases. Normally most of the liquefied gas consumed on the Atlantic seaboard is produced at east coast oil refineries as a by-product of gasoline cracking processes. When eastern refineries were compelled to reduce runs of crude oil the liquefied gas distributors were forced to haul products from western producing points. If tank cars were plentiful this would not be a serious matter as long as the railroads are functioning as efficiently as they are today. But there are no surplus cars in the high pressure fleet.

From the standpoint of available transportation capacity, the industry's fleet actually decreased during the year. This is because of long hauls to the east and the large number of cars being used constantly for the transportation of isobutane and other alkylation and blending feed stock from gasoline plants to oil refineries. Toward the end of the year, the volume of material to be moved in pressure cars

increased as the 100-octane and synthetic rubber projects got under way.

Taking note of the critical winter transportation situation, the government recently advised all users of liquefied petroleum gases to keep their storage tanks full. Liquefied gas distributors have been preaching the same gospel for some years.

Truck transportation has been effective in avoiding a crisis in liquefied gas transportation. The Office of Defense Transportation issued an order in June requiring that all distributors use trucks for the delivery of liquefied gases within a radius of 100 miles of the producing point. Later this trucking radius was extended to 200 miles. Only by obtaining special permission is it possible to use tank cars for hauls of less than 200 miles.

While it has not been possible to avoid asking for special permits on some shipments, the industry has made great progress in this direction. One distributor has been able to eliminate 1300 tank car trips by the use of trucks. Assuming that a tank car will make 30 trips per year, this one distributor, in effect, added 40 tank cars to the nation's fleet by increased use of tank trucks.

The liquefied petroleum gas industry has burned a good deal of midnight oil during 1942 in the preparation of reports required by various government agencies. It has required a great deal of time and effort to comply with all of the government directives made necessary by the war. The industry got



A 5000-gal. transport which is being used to deliver liquefied petroleum gas from oil refineries to war industries. Each such unit releases one or more high pressure tankcars for long-haul service to points far removed from production sources

its first taste of operation under war time conditions on Jan. 14 when the War Production Board issued M-68-c directing the industry not to make any new liquefied petroleum gas installations. In April this was followed by L-86 freezing all stocks of equipment and stopping all domestic sales activity except under special permit.

Although many elements of liquefied gas cost have risen, the industry's prices have been frozen under OPA 88.

Office of Défense Transportation directives also have created special problems and built up paper work for the industry.

In the domestic distribution activities of the industry a number of changes have been made in methods of operation to conserve rubber and relieve the manpower shortage. Some companies selling on a meter basis have begun billing

customers every two months instead of every month. With no merchandising activity it has been possible to divert manpower from selling to other work.

Total supply of liquefied gases has increased during the year at gasoline and recycle plants built primarily to produce isomers for aviation gasoline. Oil refineries also have increased their output of some liquefied gases as a by-product of the manufacture of unsaturates and isomers for aviation gasoline and synthetic rubber. Production of liquefied gases at oil refineries increased from 10,000,000 gal. in January to more than 20,000,000 gal. per month in midsummer.

Much of the new production at natural gasoline and recycle plants became available so late in the year that its effects will not be noted until next year. In Illinois, for example, two plants with a total daily

production of 100,000 gal. of liquefied gases were brought on stream in the final quarter of the year. One did not start until late in December. Another Illinois plant is being remodeled to produce an additional 50,000 gal. of LP-Gas daily beginning about Jan. 1. Illinois production of LP-Gas in 1943 may be nearly 50,000,000 gal. greater than in 1942.

Other States Increase Production

Louisiana and Texas also have increased production through the completion of new plants in 1942. A number of other plants will be ready for operation in the early part of 1943. In all instances new plants now being completed are equipped for the fractionation of isobutane and other special cuts needed for aviation gasoline and rubber. Construction of new plants is not permitted unless special war commodities are produced.

The effective supply of liquefied gases has been increased in a number of instances by changes in transportation facilities. A large chemical plant in Texas formerly was supplied with propane by tank car. Now it obtains its hydrocarbon raw materials in gaseous form by pipeline from a gasoline plant. This released former supplies and tank cars for other consumers.

Having devoted itself wholeheartedly to war production the liquefied petroleum gas industry can take great satisfaction from its record of service to the country in the first year of the war and look forward to a busy year in 1943. Problems of manpower, maintenance of equipment and transpor-

tation will insure the industry against any tendency toward boredom in the year just opening.



Employers Urged to Study Deferment Procedure

An official of the Selective Service System at a meeting in New York City on Nov. 3 stated 1,000,000 men would be inducted into the Army in November and December and 2,000,000 more will be drafted by the end of 1943 to give this country an army of 7,500,000, according to the A.G.A.

He reported an "amazing ignorance" among employers of the procedure they must follow to obtain deferment for irreplaceable workers. He urged all employers to familiarize themselves with occupational deferment procedure so that applications would not continue to be filed on the day before employees are scheduled to be inducted into the army.

He further stated that hundreds of thousands of men now in classes 3-A and 3-B will be reclassified into 1-A in the next few months "unless there is something in the draft board files to indicate they are irreplaceable."

This reclassification to 1-A because of recent government allowances for dependents will include those in 3-A and 3-B by reason of partial support of dependents. Employers should file at once, the appropriate occupational deferment form for irreplaceable employees now in classes 3-A or 3-B.



E. W. Lewis, Jr., Commissioned Lieutenant in U. S. Navy

E. W. Lewis, Jr., former sales manager of the Globe American Corp., Kokomo, Ind., has been commissioned a lieutenant in the U. S. Navy.

Mr. Lewis was widely known in the gas appliance field.

Customer Minimum Contract Guarantees Dealer Income

THE Home Gas Co. first began to serve the home owners in the rural area surrounding Ontario, Calif., in the spring of 1940. Since that time W. R. Sidenfaden, owner-operator, has built up a profitable business on a small amount of capital.

Mr. Sidenfaden always has kept his expenses at a minimum, expanding only as fast as seemed economically feasible. He has built his business on a foundation of service and the merits of his fuel, believing these policies to be essential for success.

Equipment for the operation of the company consists of storage tank (560 gals., spherical type); pump and electric motor for filling cylinders; loading platform, with scales, a supply of 100-gal. I.C.C. cylinders, and a light truck for delivery.

The operation of the equipment is

simple and filling operations are so arranged that it is possible to fill 24 tanks in 40 minutes. The pump used in this operation is a Smith butane-propane, Model 200, with a displacement capacity of 50 gals. a minute. The four scales, operating simultaneously, make it possible for one man to keep cylinders rolling off the scales until all are filled.

Mr. Sidenfaden operates his business with the help of one man. His service extends over a 25-mile radius from Ontario, including some of the richest agricultural acres in Southern California.

Every customer obtaining propane from the Home Gas Co. is required to buy a minimum of one 100-lb. tank of gas each month. Thus, each cylinder is picked up at least once a month and a new one takes its place. Most



W. R. Sidenfaden, owner-operator of the Home Gas Co., Ontario, Calif., beside new delivery truck. Loading rack in rear.

customers use a full cylinder monthly. In this manner a constant load is maintained and incoming revenue from customers served is guaranteed.

This system works very well, Mr. Sidenfaden states, and few customers object to the plan. When there is any criticism, the customer is usually won over by good service and proof that the fuel is worth the price.

Another unique feature of Mr. Sidenfaden's propane business is his method of storage. The spherical propane tank is so designed that it can be hoisted to the platform of the delivery truck where it is securely bolted. The truck then makes a trip to the refinery—a distance of about 50 miles—where the tank is filled with propane. This round trip is made several times each week.

When the loaded tank is returned to the home plant, it is hoisted off the truck by the use of a pulley and chain and set on a specially constructed platform, where it is fastened secure-

ly. Connections are then made and cylinders filled from the tank. This system has worked very well and makes possible a considerable saving in that only one large tank need be maintained for both storage and transportation. When the business can afford additional expense, a permanent storage tank may be purchased. In the meantime a profitable, growing LP-Gas business is making money for its owner.

A. C. Maynard, Shell Oil, Joines U. S. Naval Reserve

A. C. Maynard, long identified with the liquefied petroleum gas department of Shell Oil Co., Inc., San Francisco, has enlisted in the naval reserve for the war's duration. He has been ordered to report at Mare Island Navy yard Jan. 1.

Mr. Maynard was in the Navy during the first world's war and remained in the services up to 1935.



Four 100-gal. cylinders being filled on scales. One pump, with a capacity of 50 gal. a minute, is used.

How to Price

Under OPA Service Regulation

FOUR SIMPLE RULES

• Use these four simple rules in order to comply with the Regulation:

1. Charge no more than you did in March, 1942.
2. Keep all records showing prices charged during March, 1942.
3. File with your local War Price and Rationing Board (if you have not already done so) a list of your March services and prices, and keep it up-to-date.
4. Furnish sales slips and receipts to customers if this was your practice in March, 1942, and furnish sales slips and receipts to any customer upon request.

YOUR ceiling price for each maintenance, rental, or repair job performed by your establishment is controlled by Maximum Price Regulation No. 165, as Amended — Services. In general, this Regulation fixes your highest March 1942 price as the top price you may now charge. The Regulation applies to all service establishments.

Included among services for which this Regulation sets top charges (maximum prices) are the repair, maintenance, or rental of the following:

Electrical equipment and appliances used in homes, hospitals, hotels, offices, retail establishments, schools or other institutions. (Typical articles: Food mixers, ironing machines, lamps, ranges, household refrigerators, sewing machines, vacuum cleaners, washing machines.) Gas appliances, except gas furnaces, industrial equipment, unit heaters, or water heaters.

Also included are the prices of all

commodities, such as parts and accessories, when sold in connection with the sale of a service. The Regulation contains a complete list of the services which it covers.

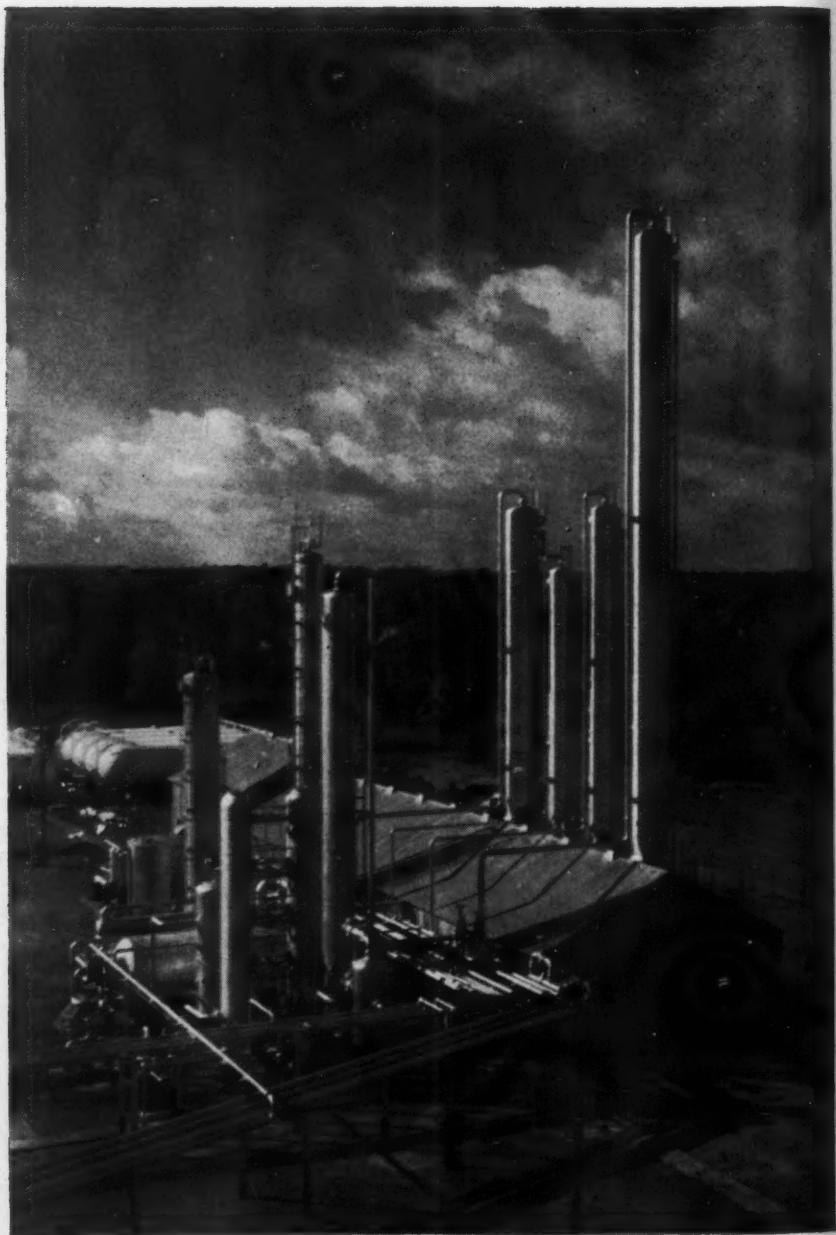
Your ceiling prices may be different from your competitor's because your *highest March 1942 prices* may differ from his.

If you charged a flat or dollars-and-cents price for a specific service in March 1942, that is the most you may now charge for that same service. Thus, if in March you charged \$1.50 to clean and adjust burners on a gas range, that is your ceiling.

Service Work Is Covered

On all service work which you priced in March according to a regular rate or pricing method (such as time records or labor manual used in connection with an hourly customer rate) you may use that rate or pricing method in determining your maximum prices, but your charges for each item in the service, such as labor, material, etc., must be no higher than those in effect in March 1942.

The Regulation is specific and requires you to use definite rules, which are designed to fit any pricing situation you may have. These rules may be obtained from the OPA regional or state offices only. Do not send to Washington for them. There is no supply there.



W
and
fact
whic
buta
plan
seve
tain
in t
Calv
west
indi
ance
reco
to c
T
app
com
atin
Wal
plan
side
pipe
App
all
well
A
pum
24-c
New
ville
rack
for
tran
T
liqu
the

Op
fr
tre

JA

Oil Pressure Maintenance Plant Will Boost Recovery of Butane and Propane

WARREN Petroleum Corp., Tulsa, Okla., has completed construction and placed in operation a new manufacturing plant at Crossville, Ill., which is producing natural gasoline, butane, propane and isobutane. This plant was built in conjunction with several producing companies to obtain pressure maintenance of oil wells in the New Harmony, Griffin and Calvin areas of eastern Illinois and western Indiana. Various estimates indicate that this pressure maintenance will increase the ultimate oil recovery per acre by 50%, according to company announcements.

The plant is divided into two parts approximately six miles apart, one compressor station and the fractionating plant on the Illinois side of the Wabash river, and one compressor plant and absorber on the Indiana side. Over 6000 hp. and 170 miles of pipeline are involved in this project. Approximately 100,000 gal. per day of all products will be made and 1000 wells repressured.

All products manufactured are pumped through separate lines to a 24-car loading rack located on the New York Central Railroad at Crossville, Ill. A modern truck loading rack has been installed at the plant for servicing Warren's truck and transport customers in that area.

This new modern plant is making liquefied petroleum gas of high purity, the isobutane moving to refineries for

the manufacture of 100-octane aviation gasoline, with the butane and propane being shipped by tank car and tank truck to a variety of markets, particularly war production plants in the middle western and eastern states.

The latest equipment available for producing liquefied petroleum gas of a uniform high quality has been installed. This fact, coupled with a competent staff of engineers and chemists, will make Warren's Crossville plant one of the most efficient in the United States, officials state.



Scarce Material Allowances Cut 40% for Utilities

The amount of scarce metals that public utilities may use for maintenance and repair of transmission and distribution systems during the last quarter of 1942 is cut approximately 40% under Order P-46 as amended Oct. 10. A reduction of the same percentage has also been made in permissible inventories.

The amended order also requires, for the first time, that electric utilities make at least 75% of their wire, cable and bus bar purchase from the inventories of other utilities instead of from manufacturers. Gas and water utilities must get at least 40% of their pipe and other similar supplies from the inventories of other gas and water utilities.

All ratings assigned by the order for materials required for maintenance and repair have been raised from A-2 to AA5, with a rating of AA-2 for emergency repairs.

Opposite Page: Compressor station and fractionating plant of the Warren Petroleum Corp., located at Crossville, Ill., which is producing LP-Gases.

THE BOTTLED GAS MANUAL

Chapter 16

In Two Parts—Part 2

- Part 1 of Chapter 16 of the Bottled Gas Manual appeared in the December issue of BUTANE-PROPANE News, Page 33. Questions and Answers for both parts are given this month.—Editor.

The Sales Value of a Careful Survey. I recently purchased an oil burner for the heating plant at "Gra-court," my home. I called in the representatives of four burner manufacturers, for I wanted to make sure that my choice was correct. Each one of them assured me that his burner would give me the greatest satisfaction, and operate the most economically. "No. 1" was a high-pressure artist of the "sign-on-the-dotted-line" type. I made short work of him. "No. 2" was the "canned talk" type. He knew his sales manager's formula for convincing sales arguments better than any parrot ever learned cuss words. He didn't interest me. "No. 3" was a "price" artist, but my interest was not in first cost but in comfort, convenience, and economy in the years to come. "No. 4" didn't have any of the ear-marks of the conventional salesman. He was just a common, ordinary, every day type of fellow. He surveyed the property carefully. He made many helpful suggestions which didn't net him a cent. He even advised me against buying his most expensive burn-

Selecting and Installing The LP-Gas Water Heater

er, for the size of the installation did not warrant it. *He got the order*, first, because he convinced me that he *knew* what he was talking about; second, because he appeared to be more interested in providing me with an entirely satisfactory installation than he was in the size of his commission check; third, because he took the time to dig into all angles of my problem carefully and wouldn't allow me to spend my money as the result of any snap judgment on his part.

Perhaps this fellow was the best salesman of them all in that he subtly flattered my ego by the routine of making a careful survey. People *do* appreciate these things, and it is the surest way of overcoming the inherent distrust that they have of the run-of-the-mine type of salesman. You will find that you will be welcomed if you make a careful survey, and the path to closing the sale will be much surer.

The Service Value of a Careful Survey. You will find that the cause

- The Bottled Gas Manual series by C. C. Turner, started in the July, 1941, issue of BUTANE-PROPANE News and will continue to be published monthly in chapter form until completed. This series constitutes a valuable text book and field manual that should be invaluable to everyone in the liquefied petroleum gas industry.—Editor.

of fully 90% of high bill complaints from customers is installations which have been made on snap judgment. When I am called in on such a case the first thing that I do is to make just as careful a survey of the job as if it had never been installed. You can cut down inputs, fool with temperatures, reduce pressures, and possibly "get by" with it, but the chances are that you will not be able to furnish perfectly satisfactory results by so doing. If the wrong heater is on the job get it out of there before it ruins all of your water heating business, and the best way to do this is by making a survey and proving to your customer with actual figures that he will be better off in the long run to junk the old heater and install the proper one.

Making the Installation. While the job of actually making the water connections to a water heater is one for the plumber, there are a lot of so-called plumbers whose ability ends at cutting a thread or screwing a joint together. The propane service man should have a general knowledge of correct plumbing practices. We have already spoken of the necessity of installing pressure and temperature relief valves on every water heating installation, or a combination of both these valves. It is also important that there shall be a "heat trap" in the hot water line immediately above the water heater. A downward slope of the hot water pipe from the heater will accomplish the same result of preventing circulation within the piping system when hot water is not being drawn. The

hot water pipe lines should be as short as possible in order to avoid heat losses from the water trapped in them when hot water is not being drawn, and they should also be of as small diameter as is practical for the same reason. How much this heat loss may amount to can be gathered by consulting Table 5, "B.t.u.'s Lost in the Cooling of Water Contained in One Foot of Common Nominal Sizes of Steel Pipe." Let us say that the temperature of the hot water is 170° and the room temperature in which the pipes are located is 70°. This is a degree differential of 100, and 23.09 B.t.u. would be lost in the cooling off of one foot of $\frac{3}{4}$ in. pipe, whereas only 13.16 B.t.u. would be lost if the pipe was of $\frac{1}{2}$ in. nominal size and only 8.27 B.t.u. if it was of $\frac{3}{8}$ in. size. One hundred feet of hot water piping is not an uncommon run if the storage tank is in the basement and the bathroom is upon the second floor, so if you will multiply these heat losses by 100 you can readily see how important it is to keep down both the length and diameter of the hot water piping. Where the draw through a hot water pipe is either continuous or intermittent within periods of an hour it is an excellent plan to insulate it.

The connection of an automatic storage water heater into any system where there is another heating medium such as a range or furnace coil is to be discouraged for two reasons, the first of which is that such auxiliary heating units are apt to cause excessive water temperatures which will be damaging to

the storage tank with its connecting tanks, and the gas water heater will be wrongfully blamed for this. The second reason is that when the auxiliary heating units are inoperative they will act as excellent radiators and a serious heat loss with its consequent high operating cost will be the result. If connection with an auxiliary heating unit is absolutely necessary the inclu-

sion of check valves is essential, just as is advisable in the case of side-arm heaters.

Many localities do not require the connection of a propane-fired water heater flue to a chimney or other vent. This is necessary and a down-draft diverter should be installed. Many water heater manufacturers furnish these with their heaters.

TABLE 5. B.T.U.'S LOST IN THE COOLING OF WATER CONTAINED IN ONE FOOT OF COMMON NOMINAL SIZES OF STEEL PIPE

Temperature Differential*	Nominal Sizes of Steel Pipe								
	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
	B.t.u. Lost								
1	.0246	.0451	.0827	.1316	.2309	.3742	.6477	.8816	1.458
5	.1230	.2255	.4135	.6580	1.1545	1.8710	3.2385	4.408	7.265
10	.246	.451	.827	1.316	2.309	3.742	6.477	8.816	14.530
15	.369	.6765	1.2405	1.974	3.4635	5.6130	9.7155	13.224	21.795
20	.492	.902	1.654	2.632	4.618	7.484	12.954	17.632	29.06
25	.615	1.1275	2.0675	3.290	5.7725	9.355	16.1925	22.040	36.325
30	.738	1.353	2.481	3.948	6.927	11.226	19.431	26.448	43.590
35	.861	1.5785	2.8945	4.606	8.0815	13.097	22.6695	30.856	50.855
40	.984	1.804	3.308	5.264	9.236	14.968	25.908	35.264	58.12
45	1.107	2.0295	3.7215	5.922	10.3905	16.839	29.1465	39.672	65.385
50	1.230	2.255	4.135	6.58	11.545	18.710	32.385	44.08	72.65
55	1.353	2.4805	4.5485	7.238	12.6995	20.581	35.6235	48.488	79.915
60	1.476	2.706	4.962	7.896	13.854	22.452	38.862	52.896	87.180
65	1.599	2.9315	5.3755	8.554	15.0085	24.323	42.1005	57.304	94.445
70	1.722	3.157	5.789	9.212	16.163	26.194	45.339	61.712	101.710
75	1.845	3.3825	6.2025	9.87	17.3175	28.065	48.5775	66.120	108.975
80	1.968	3.608	6.616	10.528	18.472	29.936	51.816	70.528	116.24
85	2.091	3.8335	7.0295	11.186	19.6265	31.807	55.0545	74.936	123.505
90	2.214	4.059	7.443	11.844	20.781	33.678	58.293	79.344	130.77
95	2.337	4.2845	7.8565	12.502	21.9355	35.549	61.5315	83.752	138.035
100	2.46	4.51	8.27	13.16	23.09	37.42	64.77	88.16	145.30
105	2.583	4.7355	8.6835	13.818	24.2445	39.2910	68.0085	92.568	152.565
110	2.706	4.961	9.0970	14.476	25.390	41.1620	71.247	96.976	159.830
115	2.829	5.1865	9.5105	15.134	26.5535	43.0330	74.4855	101.384	167.095
120	2.952	5.4120	9.9240	15.792	27.708	44.9040	77.7240	105.792	174.360
125	3.075	5.6375	10.3375	16.450	28.8625	46.7750	80.9625	110.200	181.625
130	3.198	5.8630	10.7510	17.108	30.017	48.646	84.201	114.608	188.890
135	3.321	6.0885	11.1645	17.766	31.1715	50.5170	87.4395	119.016	196.155
140	3.444	6.314	11.578	18.424	32.326	52.388	90.678	123.424	203.420
145	3.567	6.5395	11.9915	19.082	33.4805	54.290	93.9165	127.832	210.685
150	3.690	6.7650	12.405	19.740	34.635	56.1300	97.155	132.240	217.950
155	3.813	6.9905	12.8185	20.398	35.7895	58.001	100.393	136.648	225.215
160	3.936	7.216	13.232	21.056	36.944	59.872	103.632	141.056	232.480
165	4.059	7.4415	13.6455	21.714	38.0985	61.743	106.870	145.464	239.745
170	4.182	7.667	14.059	22.372	39.253	63.614	110.109	149.872	247.010

* The "Temperature Differential" is the difference in temperature between the hot water as it enters the pipe and that of the air in the room in which the pipe is located.

Note: The B.t.u. loss is only for one filling of the pipe. It does not represent the loss which would occur if the flow of water is continuous or intermittent. In either of these two cases the loss per hour would be considerably in excess of the losses given.

Tempering Tanks. If we have carefully studied the tables in "Correctional Chart for Manufacturers' Ratings of Water Heaters" we have noted the marked effect of the temperature differential between the incoming cold water and the outgoing hot water on the actual recovery of the heater. Going back to our example of the 5000 B.t.u. water heater again, here was a heater that had a recovery of 7 gals. per hour with a temperature differential of 60°, but only recovers about 3.6 gals. per hour with a temperature differential of 100°. If we can by any means raise the temperature of the incoming water so as to cut down the temperature differential we can give the customer the temperature of hot water that he desires and at the same time increase the recovery per hour of his water heater and cut down his operating cost.

There are instances where the temperature of the incoming water is very low, such as 40°, but there is a basement which runs an even temperature of about 60°. Let us suppose that the customer is using about 100 gals. of hot water a day, and that we can raise the temperature of the cold water from 40° to 60° by installing a tempering tank. $100 \times 8.33 \times 20 = 16,660$ B.t.u.'s can be saved each day, or better than 23 lbs. of propane per month.

An old range boiler that is in good condition makes an excellent tempering tank. If it is installed in the basement it should be fastened horizontally to the basement ceiling in order to take advantage of the fact that heat rises. The cold

water supply line should enter this tank at as low a point as possible and the water pipe leading from this tank to the water heater should be connected to the tank at as high a point as possible for the same reason.

There are other methods of tempering the incoming water. A friend of mine has a coil inside of the furnace flue pipe. In the winter time he can quite often do without his gas-fired water heater because of the high stack temperatures of the furnace. In some of the newer homes a coil is built into the base of the chimney at the point where the furnace flue pipe enters. On one farm installation there was a branch leading off from the water supply line on the exterior of the building, and this branch line led through a manure pit and then to the water heater, thereby taking advantage of the animal heat in the manure which otherwise would have been wasted. Another method sometimes used is to branch off from the water supply pipe as it enters the house and either run a long length of pipe to the heater along the ceiling of the basement or use a large pipe from the supply pipe to the heater. Both of these methods give the water a chance to pick up heat from the basement and are in effect the same as installing a tempering tank.

Causes of High Bill Complaints.

There are at least 13 causes of high bill complaints.

A. Improper heater for the job. The heater may have too great storage or too great a burner input. There is nothing much that can be done if the

storage tank is too large excepting to install one of the correct size. If the burner input is too great this can be cut down, or a burner of the correct size installed.

B. Circulation through another heating medium. In this case the best remedy is to disconnect the other heating medium. If you cannot do this a check valve should be installed in the cold water line between the auxiliary heater and the storage tank, and the valve should be so installed that it will allow cold water to flow from the tank to the auxiliary heater but prevent reverse circulation from the bottom connection of the auxiliary heater to the storage tank.

C. Carrying too high hot water temperatures. The cut-off setting of the thermostat should be lowered. You may have a job of education on your hands to convince the customer that this should be done. A practical demonstration of actual temperatures used will in most cases turn the trick.

D. Incoming water too cold. In this case you will have to find some method such as the use of a tempering tank to remedy the condition.

E. Leaky faucets. These contribute to high bill complaints far more than

we are apt to realize, and the remedy is to put in new faucet washers. Table 6 will give an idea of how expensive such leaks may be.

F. Carelessness and ignorance. The only remedy for this cause is the education of the customer as to the cost of wasteful use of hot water as well as unnecessarily high hot water temperatures.

G. Too large pipe lines. A reference to the table, "B.T.U. Lost in the Cooling of Water Contained in One Foot of Common Nominal Sizes of Steel Pipe" should convince anybody of the advisability of using as small hot water pipes as possible. Where large pipe lines are the cause of excessive losses it may help to insulate them, but the most satisfactory remedy is to put in new pipes of the proper size.

H. Circulation in hot water pipes. You can determine whether or not this is happening by feeling of the hot water pipe about two feet away from the water heater 20 minutes after water has been drawn through it. If it is appreciably warmer than the air in the room, circulation within the pipe is occurring. The remedy is a properly designed heat trap at the point where the pipe connects to the heater.

I. Heat losses through the pipe lines. This is where the draw through the hot water pipe is continuous or intermittent within hourly periods. The remedy is to insulate the hot water pipes.

J. Faulty heater insulation. This occurs more often than is realized. The remedy is to remove the top of the heater jacket and re-insulate the heater.

K. Too long pipe lines. This condition can often be remedied by relocating the heater so that it is placed between the extremities of the hot water pipes that it supplies.

L. High stack losses. If it is not possible to cut down the burner input, try baffling the flue with spiral

TABLE 6.

If the Faucet Leaks in Drops Per Minute	The Number of Gallons Lost Per Month Will Be	The Number of lbs. of Propane Required to Heat This Amount of Water Without Efficiency Considera- tions Through 100° F.
60	192	7.39
90	310	11.94
120	429	16.52
Stream, breaking to drops 3" from faucet	1095	42.18
Stream, breaking to drops 6" from faucet	2190	84.36
Stream, breaking to drops 9" from faucet	3290	126.73

baffles or with flue plates. Do not, under any condition, use steel wool or other padded packing as it may slip or settle down and cause a complete flue stoppage. Be sure to carefully observe the burner for proper combustion after you have baffled the flue and be particularly alert for flue odors which indicate improper combustion.

M. Direct flue connection. The remedy is to install a draft diverter in the flue pipe adjacent to the water heater.

N. Disconnected dip pipe. The dip pipe is the one which runs from the top of the tank on the inside to a point near the bottom and through which the cold water enters the tank. This pipe will sometimes corrode so as to break off, become unscrewed, or it may have been left out altogether. The indications of this condition are plenty of hot water in the tank, but only a small supply of hot water followed by a continuous supply of luke-warm water, and the cause is the direct circulation of the incoming cold water across the top of the tank and out the hot water pipe. The only remedy is the installation of a dip pipe in the proper manner.

Service Problems. Water heater service problems are few and far between other than those which we have already mentioned under the subject of "Causes of High Bill Complaints." Troubles with thermostats, burners and pilots are no different from those which may occur with any other appliance and we have discussed these matters under their proper headings.

Occasionally a water heater may give some trouble with condensation in the combustion chamber or flue. Water is a product of combustion, and the reason that this condensation is visible to us at times in water heaters when it is not apparent to us in other appliances is that the water inside of

the heater keeps the surfaces of the combustion chamber and flue relatively cool and the water in the combustion gases condenses upon them. This condition is most noticeable when the heater is first started and usually will disappear as the heater approaches its normal operating conditions.

If condensation drops upon the thermocouple generator or other automatic pilot device it is apt to cool it sufficiently to cause the entire shutting off of the gas supply. In this case a small shield should be installed over the thermocouple generator or other automatic pilot device so as to prevent the dropping of condensed water upon it. Continuous trouble with condensation is usually an indication of an overloaded water heater, and the condition can sometimes be remedied by increasing the burner input, thereby increasing the temperature of the combustion chamber and flue so that condensation formed between periods of burner operation will be quickly turned to steam and pass off through the flue and stack as vapor or steam. If a water heater is installed in a basement and the basement is damp, condensation may form so as to be troublesome even though the burner input is sufficient and the heater of ample size. In such instances the condition can usually be remedied by installing a cold air duct so that the primary and secondary air come from a point outside the building.

Selection of the Water Heater on Basis of the Fixtures Served. In Chapter 14 I made mention of the fact that very reliable estimates of

storage tank is too large excepting to install one of the correct size. If the burner input is too great this can be cut down, or a burner of the correct size installed.

B. Circulation through another heating medium. In this case the best remedy is to disconnect the other heating medium. If you cannot do this a check valve should be installed in the cold water line between the auxiliary heater and the storage tank, and the valve should be so installed that it will allow cold water to flow from the tank to the auxiliary heater but prevent reverse circulation from the bottom connection of the auxiliary heater to the storage tank.

C. Carrying too high hot water temperatures. The cut-off setting of the thermostat should be lowered. You may have a job of education on your hands to convince the customer that this should be done. A practical demonstration of actual temperatures used will in most cases turn the trick.

D. Incoming water too cold. In this case you will have to find some method such as the use of a tempering tank to remedy the condition.

E. Leaky faucets. These contribute to high bill complaints far more than

we are apt to realize, and the remedy is to put in new faucet washers. Table 6 will give an idea of how expensive such leaks may be.

F. Carelessness and ignorance. The only remedy for this cause is the education of the customer as to the cost of wasteful use of hot water as well as unnecessarily high hot water temperatures.

G. Too large pipe lines. A reference to the table, "B.T.U. Lost in the Cooling of Water Contained in One Foot of Common Nominal Sizes of Steel Pipe" should convince anybody of the advisability of using as small hot water pipes as possible. Where large pipe lines are the cause of excessive losses it may help to insulate them, but the most satisfactory remedy is to put in new pipes of the proper size.

H. Circulation in hot water pipes. You can determine whether or not this is happening by feeling of the hot water pipe about two feet away from the water heater 20 minutes after water has been drawn through it. If it is appreciably warmer than the air in the room, circulation within the pipe is occurring. The remedy is a properly designed heat trap at the point where the pipe connects to the heater.

I. Heat losses through the pipe lines. This is where the draw through the hot water pipe is continuous or intermittent within hourly periods. The remedy is to insulate the hot water pipes.

J. Faulty heater insulation. This occurs more often than is realized. The remedy is to remove the top of the heater jacket and re-insulate the heater.

K. Too long pipe lines. This condition can often be remedied by relocating the heater so that it is placed between the extremities of the hot water pipes that it supplies.

L. High stack losses. If it is not possible to cut down the burner input, try baffling the flue with spiral

TABLE 6.

If the Faucet Leaks in Drops Per Minute	The Number of Gallons Lost Per Month Will Be	The Number of lbs. of Propane Required to Heat This Amount of Water Without Efficiency Considera- tions Through 100° F.
60	192	7.39
90	310	11.94
120	429	16.52
Stream, breaking to drops 3" from faucet	1095	42.18
Stream, breaking to drops 6" from faucet	2190	84.36
Stream, breaking to drops 9" from faucet	3290	126.73

baffles or with flue plates. Do not, under any condition, use steel wool or other padded packing as it may slip or settle down and cause a complete flue stoppage. Be sure to carefully observe the burner for proper combustion after you have baffled the flue and be particularly alert for flue odors which indicate improper combustion.

M. Direct flue connection. The remedy is to install a draft diverter in the flue pipe adjacent to the water heater.

N. Disconnected dip pipe. The dip pipe is the one which runs from the top of the tank on the inside to a point near the bottom and through which the cold water enters the tank. This pipe will sometimes corrode so as to break off, become unscrewed, or it may have been left out altogether. The indications of this condition are plenty of hot water in the tank, but only a small supply of hot water followed by a continuous supply of luke-warm water, and the cause is the direct circulation of the incoming cold water across the top of the tank and out the hot water pipe. The only remedy is the installation of a dip pipe in the proper manner.

Service Problems. Water heater service problems are few and far between other than those which we have already mentioned under the subject of "Causes of High Bill Complaints." Troubles with thermostats, burners and pilots are no different from those which may occur with any other appliance and we have discussed these matters under their proper headings.

Occasionally a water heater may give some trouble with condensation in the combustion chamber or flue. Water is a product of combustion, and the reason that this condensation is visible to us at times in water heaters when it is not apparent to us in other appliances is that the water inside of

the heater keeps the surfaces of the combustion chamber and flue relatively cool and the water in the combustion gases condenses upon them. This condition is most noticeable when the heater is first started and usually will disappear as the heater approaches its normal operating conditions.

If condensation drops upon the thermocouple generator or other automatic pilot device it is apt to cool it sufficiently to cause the entire shutting off of the gas supply. In this case a small shield should be installed over the thermocouple generator or other automatic pilot device so as to prevent the dropping of condensed water upon it. Continuous trouble with condensation is usually an indication of an overloaded water heater, and the condition can sometimes be remedied by increasing the burner input, thereby increasing the temperature of the combustion chamber and flue so that condensation formed between periods of burner operation will be quickly turned to steam and pass off through the flue and stack as vapor or steam. If a water heater is installed in a basement and the basement is damp, condensation may form so as to be troublesome even though the burner input is sufficient and the heater of ample size. In such instances the condition can usually be remedied by installing a cold air duct so that the primary and secondary air come from a point outside the building.

Selection of the Water Heater on Basis of the Fixtures Served. In Chapter 14 I made mention of the fact that very reliable estimates of

REGO AND LP Gas



BUY WAR BONDS
FOR VICTORY

REGO

LP GAS EQUIPMENT

asure
astian

The

oneers

HELP TENT MAKERS

W. G. Petty and Son are operating their LP Gas business by devoting their efforts to war installations. For example, they have installed large underground tanks to supply butane for heating a defense plant in a large city, because of restrictions in the use of natural gas. The plant is rushed night and day making tents for the Army. Rego equipment is used throughout the system to regulate and safeguard the gas which operates ceiling unit heaters having a capacity of 1,500,00 BTUs. This is another application of LP Gas and RegO to help war production.



Ensure perfect performance and economy by insisting on genuine Bastian-Blessing products identified by the RegO trademark.

The **BASTIAN-BLESSING Co.**
4233 Peterson Avenue Chicago, Ill.

Dealers in equipment for using and controlling high pressure gases.



TABLE 7. MAXIMUM DAILY REQUIREMENTS FOR HOT WATER

Hotels	
<i>Class of Service</i>	<i>Gallons in 24 hours</i>
Room with basin.....	10
Room with bath—	
Transient.....	40
Resident (bachelor).....	40
(women).....	70
(mixed).....	60
Two rooms with bath.....	80
Three rooms with bath.....	100
Public bath.....	150
Public shower.....	200
Public basin.....	150
Slop sink for cleansing.....	30

Restaurants		
<i>Average Price of Meal</i>	<i>Gallons For Hand Washing Per Meal</i>	<i>Gallons For Machine Washing Per Meal</i>
\$0.50	1.0	1.5
1.00	1.5	2.5
1.50	2.0	4.5

Lofts and Offices	
<i>Class of Service</i>	<i>Gallons Per Day</i>
Cleaning, per 10,000 square feet.....	30
Factory help, per person.....	5
Office help, per person.....	2

Apartments and Private Dwellings, Including Laundry											
Rooms Per Suite	Number of Bathrooms					Rooms Per Suite	Number of Bathrooms				
	1	2	3	4	5		1	2	3	4	5
1	60					11		260	300	340	
2	70					12		280	325	380	450
3	80					13		300	350	420	500
4	90	120				14			375	460	550
5	100	140				15			400	500	600
6	120	160	200			16				540	650
7	140	180	220			17				580	700
8	160	200	240	250		18				620	750
9	180	220	260	275		19					800
10	200	240	280	300		20					850

(Reproduced with permission of The Hotstream Heater Co.)

water consumption could be made on the basis of the number of fixtures served if the population conditions are stable. While this method has been found most reliable in making surveys of hot water requirements in hotels, restaurants, factories, clubs, and office buildings, I believe that you will find the method which I have outlined herein the most practical for the average American home. Among the advocates of the per-fixture basis is the Hotstream Heater Co. and their method of computation is very clearly explained in their catalogs. I feel that particular mention should be made of the data which they have developed, and they have given me permission to include it in this chapter in Tables 7, 8, 9 and 10 and the following references:

Peak Demands.

Private dwellings. The peak hourly demand may be 1/7th of the 24 hour demand, and may last as long as 4 hours.

Office buildings. The peak demand is about 1/7th of the 24 hour demand, but lasts only about 2 hours.

Restaurants. Those serving meals all day have comparatively no peak load. Those serving one meal per day have a peak hourly requirement of about 1/5th the 24 hour consumption for a period of 2 hours.

Factories. The peak lasts about 1 hour and is about 1/3rd of the daily consumption.

Capacity of Storage Tanks.

Homes. Need an approximate storage capacity equal to 1/5th the daily quantity of water used.

Apartments. 1/3rd the daily consumption.

Hotels and restaurants. 1/10th the daily consumption.

Office buildings. 1/6th the daily consumption.

One-meal restaurants. About 40% of the daily consumption.

Checking of One Method of Computation Against the Other. You can have a very interesting time

TABLE 8.—WATER TEMPERATURE REQUIRED FOR VARIOUS CLASSES OF SERVICE.

Class of Service	Minimum Degrees Fahrenheit	Maximum Degrees Fahrenheit
Baptistries	70	110
Barber shop (not sterilizing)	115	150
Bars and soda fountains (hot drinks) ..	175	212
Baths only	110	150
Dishwashing (hand work)	130	212
Dishwashing (machine)	180	212
Garage (for washing cars)	80	100
General (domestic use)	130	160
Laundry (hand work)	115	212
Laundry (machine work)	180	212
Lavatories and cleaning uses	115	150
Milk dealers (not sterilizing or pasteurizing)	115	150
Shower baths	100	130
Swimming pools ..	70	100

(Permission The Hotstream Heater Co.)

TABLE 9.—FLOW OF WATER IN GALLONS PER MINUTE DELIVERED BY ORDINARY PLUMBING FIXTURES

Fixture	Fair Flow	Good Flow	Excellent Flow
Kitchen sink bibbs. 2		4	6
Pantry sink — high goose neck bibbs. 2		2	3
Pantry sink — large plain bibbs	4	6	8
Vegetable sink bibbs 2		4	6
Laundry tray bibbs. 4		6	8
Slop sink bibbs..... 3		4	6
Lavatory bibbs	2	3	4
Bathtub bibbs	3	4	6
Shampoo spray ....½		1	2
Liver spray	1	2	3

(Permission The Hotstream Heater Co.)



Entirely Rewritten Handbook BUTANE-PROPANE GASES

481 Pages of Up-to-Date LP-Gas Information, Charts, Diagrams and Photographs

\$5⁰⁰

CHECK THE NEW CONTENTS

PART 1. INTRODUCTION

Chapter 1: The Progress of the Industry and the History of its Development.

Chapter 2: The ABC of LP-Gas, an Introduction to LP-Gas Operations.

PART 2. PHYSICAL AND CHEMICAL PROPERTIES

Chapter 1: Properties of the Hydrocarbons in LP-Gas.

Chapter 2: Properties of Butane-Propane Mixtures.

Chapter 3: Volume Correction Factors.

Chapter 4: Analytical Determination and Testing.

PART 3. PRODUCTION OF LP-GAS

Chapter 1: Natural Gasoline Plants, Recycling Plants, Oil Refineries.

PART 4. TRANSPORTATION AND STORAGE

Chapter 1: Delivery by Truck, Rail, Water, and Pipe Line.

Chapter 2: Storage Tank and Pressure Vessel Design.

Chapter 3: Liquid Metering and Pumping Systems.

PART 5. DISTRIBUTION OF LP-GAS

Chapter 1: Installing and Servicing LP-Gas Systems.

Chapter 2: Semi-Bulk Systems.

Chapter 3: Bottled Gas Systems.

Chapter 4: Gas Utility Service From Central Plants.

Chapter 5: Multiple Utility Service From a Central Plant.

PART 6. UTILIZATION OF LP-GAS

Chapter 1: Comparative Performance With Other Fuels.

Chapter 2: Appliance Installation and Testing.

Chapter 3: Domestic Applications.

Chapter 4: Commercial Applications.

Chapter 5: Industrial Applications.

Chapter 6: Enrichment, Peak Load and Stand-by Uses.

Chapter 7: A Fuel for Internal Combustion Engines.

PART 7. REGULATIONS

Section 1: N.B.F.U. Pamphlet No. 58.

Section 2: Motor Carrier Regulations.

Section 3: Freight Regulations.

Section 4: Unloading Tank Cars.

Section 5: Marine Regulations.

PART 8. APPENDIX

Section 1: Products Liability Insurance.

Section 2: Handy Tables for Field Use.

Section 3: Bibliography.

Section 4: Glossary of Terms.

CATALOGUE SECTION

A comprehensive presentation of LP-Gas appliances and equipment by the manufacturers of the LP-Gas industry's best known products.

We pay postage on orders accompanied by check or money order. In California add 3% for sales tax. In Canada add 10% for excise tax.

BUTANE-PROPANE
News

1709 W. 8th St. Los Angeles, Calif.

**ORDER
YOUR COPY
TODAY**

of it by checking the "analysis" method against the "per-fixture" method of determining the size of water heater to use. You will find that in most cases the per-fixture method will call for a larger water heater, but if there is any great difference between the results obtained from both methods you should check over your figures again.

How quickly such a check can be made is shown in the following example. A six room private dwelling calls for a maximum of 120 gals. of hot water a day by the per-fixture method of calculations. The storage capacity should be $1/5$ th of this, or 22 gals. The peak demand

is apt to be $1/7$ th of 120 gals. for as many as four consecutive hours, so the combined storage and recovery must be at least $4/7$ th of 120 gals. or 68.57 gals. From this we may deduct our storage of 22 gals., leaving 46.57 gals. which must be recovered over a period of 4 hours or $1/4 \times 46.57 = 11.64$ gals. Don't forget to adjust this amount in accordance with the "Correctional Chart for Manufacturers' Ratings" when you select the water heater!

So much for the selecting and installing of the proper water heater. Here again we have only been able to scratch the surface, but if we remember and apply all that we have discussed we won't have much

**TABLE 10. CAPACITY OF HOT WATER EQUIPMENT TO SUPPLY
FIXTURES IN VARIOUS TYPES OF BUILDINGS,
GALLONS PER MAXIMUM HOUR**

Fixtures	Apt. House	Club	Gymnasium	Hospital	Hotel	Industrial Plant	Laundry	Office Building	Public Bath	Private House	School	YWCA or YMCA
Wash basin (private).....	3	3	3	3	3	3	3	3	3	3	3	3
Wash basin (public)	5	8	10	10	10	15	10	15	15	..	15	15
Bath tub	15	15	30	15	15	30	111	111	45	15	..	30
Dish washer	15	30	..	30	30	30	..	..	..	15	15	..
Foot basin	3	3	..	3	3	..	..	..	..	3	..	10
Kitchen sink	10	20	..	20	20	20	..	..	..	10	10	20
Laundry tub (stationary)....	25	35	..	35	35	..	45	..	45	25	..	45
Laundry tub (revolving)....	75	75	..	100	150	..	100	..	100	75	..	100
Pantry sink	10	20	..	20	20	..	10	..	..	10	20	20
Shower	100	200	300	100	100	300	..	..	300	*100	300	200
Slop sink	20	20	..	20	30	20	..	20	20	15	20	20
% of total water likely to be drawn in one hour.....	20	30	60	40	30	70	80	15	80	30	25	30
Dish washer	250 gallons per hour for each 500 people											

* Author's Note: The quantity of 100 gallons per hour for a shower in a private house would appear to be excessive unless the home is a very large one and there are several occupants.

(Reprinted with permission of The Hotstream Heater Co., and originally taken by them from Journal, A.S.H. & V.E., volume 26, page 701, article by A. Buenger.)

trouble in successfully selling and servicing our water heating problems. My advice to you is, however, to read everything that you can get hold of on this subject. Pay particular attention to manufacturer's manuals and recommendations. Get a copy of Charles Merriam, Jr.'s, excellent book on "Household Gas Water Heating," as well as the American Gas Association's Industrial Gas Series book on "Water Heating." If you will do this and intelligently apply that which you read you will be spending your time in a way that will pay you dividends!

Now, for the questions on Chapter 16. Then check with the correct answers on page 58.

Questions on Chapter 16

1. From a sales standpoint what particular advantage has a Survey over the Per-Fixture method of determining the size of water heater to recommend?
2. What is the principle of a "heat trap"?
3. What two reasons are there for discouraging the connection of any auxiliary heating unit to the tank of an automatic gas fired water heater?
4. When should a tempering tank be installed?
5. If a customer's gas bill is \$5 per month for water heating and the temperature differential can be cut down from 90° to 60°, how much can you theoretically reduce his bill by so doing?
6. If the storage tank is hot but you can draw only luke warm water from it, what does this indicate?
7. Excessive condensation in the flue and combustion chamber is usually an indication of what condition?
8. What would you first try doing in order to correct this condition?
9. Why are smaller pipes used on the hot water system than on the cold water system?
10. Why must the manufacturer's rated recovery of a water heater be corrected?



New Housing Units Reach Huge Totals

More than 11,000 housing units a week were placed under construction in the public war-housing program during September, according to Commissioner Herbert Emmerich, Federal Public Housing Authority. The total for the month was 50,435.

Housing units completed during September under the war-housing program totaled 14,933, and the number of new units assigned for development during the month totaled 62,102.

Of the 50,435 projects awarded for construction, 10,089 were family-dwelling units; 793 two-person family-dormitory units; 39,010 dormitory accommodations for single persons and 543 trailer units.

Housing units completed included 7719 family-dwelling units, 717 two-person family-dormitory apartments; 5942 single-person dormitory units, and 555 trailer units.

New projects assigned for development included 47,065 family-dwelling units; 15,370 two-person dormitory units; 666 single-person dormitory units, and 333 trailer units.



We're renewing our 1942 New Year's Resolutions for 1943

As the curtain rises on another momentous year in a war-torn world, men and women of the Caloric organization are reaffirming with vigor and confidence the New Year's resolutions made in 1942. Here they are:

1 To bring Victory nearer each day by speeding up the job of producing the equipment needed by our armed forces. (All Caloric production is now on war materials.)

2 To continue the research of our engineers and designers on the Caloric "Range of the Future."

We welcome the suggestions of Caloric dealers in helping us to carry out resolution No. 2. Will you put on your thinking cap and give us your thoughts on this dream range?



CALORIC GAS STOVE WORKS • PHILADELPHIA, PA.
JANUARY-1943

Mabon R. Roper, President, Geo. D. Roper Corp., Dies

Mabon R. Roper, president, George D. Roper Corp., Rockford, Ill., and well known leader in the gas stove and appliance industry, died suddenly at his home, Dec. 10. He was 50 years of age. Mr. Roper had taken a very active part in the affairs of his company up to the time of his death.

Life Devoted to His Company

Mr. Roper was the son of Mr. and Mrs. George D. Roper and was born in Rockford, Ill., where he lived all his life. He was a graduate of Cornell university in mechanical engineering and was first employed in 1914 by the Eclipse Gas Stove Co., owned by his father, and which later became the George D. Roper Corp. Mr. Roper gleaned first-hand knowledge of the company's operations by working in every capacity from errand boy to credit manager and secretary, and when his father died in 1925 he was well equipped to assume the presidency. Besides being president and a director of the Roper Corp. he was, at the time of his death, a director of Blackhawk Engineering Co., Roper subsidiary.

Mabon Roper was a member of the American Gas Association, Association of Gas Appliance and Equipment Manufacturers, Illinois Manufacturers' Association, Founders and Patriots of America, Illinois Society of Sons of American Revolution, Military Order of the Loyal Legion of the United States, Guild of Ancient Suppliers of Gas Appliances, Skills, Gins, Accessories and Substances, and university clubs of Rockford and Chicago, and Rockford Country Club.

The George D. Roper Corp. was one of the nation's first major factories to convert from peacetime to a 100% war production program.

Truck Owners Have Chance To Get Needed Gasoline

A message dated Dec. 19 from the Office of Defense Transportation to all truck, bus and taxicab owners whose Certificates of War Necessity do not provide sufficient mileage and fuel allotments for their necessary operation states that owners should estimate carefully what additional requirements will be, and warns not to ask for more mileage and fuel than actually needed to carry on essential operations efficiently.

After estimating additional requirements, one should proceed at once to request a change in the Certificate.

This period ends Jan. 31, but all requests for corrected Certificates should be in the hands of the ODT long before then.

Property Transportation Tax Cannot Be Added to Price

Provisions stating that the 3% property transportation tax, which became effective Dec. 1, cannot be passed on in the form of increased prices formally were written into the General Maximum Price Regulation Dec. 11.

The Office of Price Administration pointed out that legally Supplementary Order No. 31, issued Nov. 26, made these provisions govern prices under the General Regulation as well as other price regulations. However, for the sake of clarity it was decided to add the provisions to the text of the General Regulation itself.

Many Accessories Banned On Cooking Appliances

In addition to thermostats, Amended Limitation Order L-23-c bans the manufacture on domestic cooking appliances of closets, shelves, aprons, clocks and cast iron pans.

The order is dated Dec. 2.

WAR-TIME HELP FOR YOUR BUSINESS!

REGULATORS AVAILABLE FOR PROMPT SHIPMENT!

Fisher Governor Company can still supply you with standard types of L.P.G. Regulators, regulator assemblies and accessories, when your orders for this equipment signed, proper certification, manually signed, in accordance with General Limitations Order No. L-86. Our stock of L.P.G. regulators and accessories were manufactured and assembled before the issuance of Order L-86 and we believe, will take care of your limited requirements for the "duration".

COMPLETE RECONDITIONING SERVICE! . . .

Send your old regulators to us. We will replace worn or broken parts, test for leaks and pressure setting, and send them back to you as good as new.

NEW SERVICE MANUAL!

Designed to completely serve your maintenance needs. Contains sectional drawings, parts lists, instructions, parts prices for all Fisher L.P.G. Regulators. Send for your copy today.

FISHER GOVERNOR COMPANY

944 Fisher Building • MARSHALLTOWN, IOWA

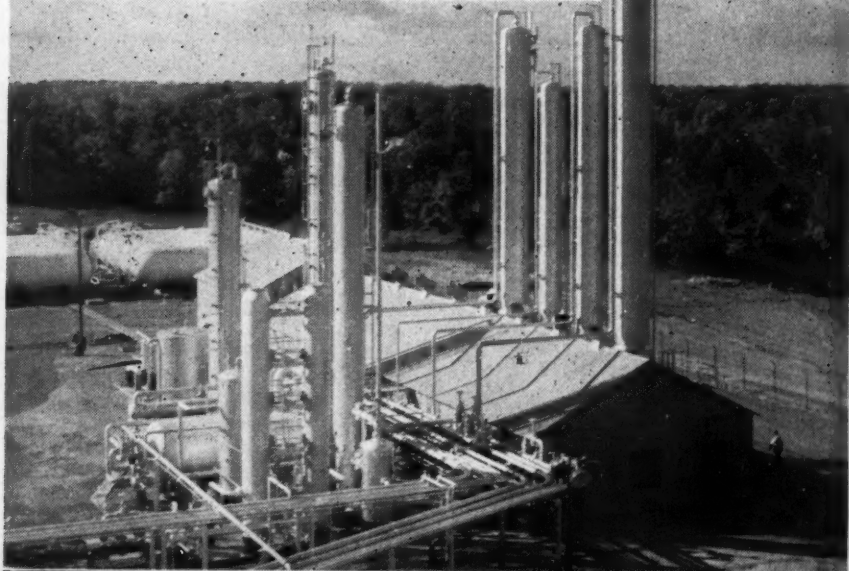
JANUARY-1943

WARREN

LIQUEFIED PETROLEUM GAS

For making 100 octane aviation gasoline, for processing many kinds of war machines and materials, Warren's Butane and Propane are playing a vital part in America's Victory Program. Increased production and facilities also enable us to take care of all of our valued customers.

You can depend on Warren



WARREN PETROLEUM CORPORATION

Tulsa, Oklahoma

RESEARCH

● EACH MONTH a competent staff reviews more than 70 publications serving the oil, gas and affiliated industries in a search for those published articles of value to technicians and executives in the liquefied petroleum gas industry. In this department of BUTANE-PROPANE News, brief abstracts of such articles are presented.—Editor.

Dehydrating Liquids and Gases with Granular Absorbents—R. G. Capell and R. C. Amero. *Oil and Gas Journal*, June 18, 1942, pp. 37-39. The removal of moisture and sulfur from natural gases and refinery distillates is becoming increasingly important as higher transfer pressures introduce freezing problems and as adverse conversions result from processing sulfur-bearing refinery intermediates over catalysts which are often poisoned by sulfur. The removal of moisture and sulfur can be advantageously carried out in the plant by passing the stream through granular adsorbents which can be revived. The characteristics of the procedure and limitations for revivifying the adsorbing media are outlined in this article.

Phase Equilibria in Hydrocarbon Systems—B. H. Sage and W. N. Lacey. *Industrial and Engineering Chemistry*, June, 1942, pp. 730-737. The specific volume of n-pentane was determined at pressures from near atmospheric to 10,000 lbs. per sq. in. at 10 temperatures between 100° and 460°F. The vapor pressure of this hydrocarbon was determined at nine temperatures in this interval, and the volumetric behavior in the critical region was studied in some detail. En-

thalpy-pressure coefficients in both the gaseous and liquid regions were calculated from the volumetric data. From these and other pertinent published data, values of isothermal enthalpy changes and of the fugacity of n-pentane were calculated throughout the above-mentioned ranges of temperature and pressure. The results are presented in tabular form, and diagrams illustrating the behavior are included.

High Pressure Gas Measurement—T. A. Matthews, C. H. Roland and D. L. Katz. *Refiner*, June, 1942, pp. 58, etc. Part 1. The density of natural gases. Part 2. A suggested standard method for calculation of high pressure gas measurement. The metering of natural gases through orifices under high pressure creates problems of two types. First, the calculation of the quantity of gas flowing through the meter requires the density of the gas. This usually involves a choice of the correct compressibility factor to account for its deviation from ideal gas laws. Second, the reduction in pressure accompanying flow of a natural gas at high pressure may cause liquid to be present from retrograde condensation. This liquid may interfere with uniform meter operation and must be included in the density of the gas flowing. The reliability of the compressibility factor method for gas density calculations has been investigated in the Phillips Petroleum Co. laboratories and a summary of this information was prepared in the summer of 1941. The first part of this paper is essentially an abstract

of this report covering the comparison of the experimental and calculated compressibility factors on these eight natural gases, augmented by recent data from Texas A. & M. on four natural gases. The use of the compressibility factor for computing the density of high-pressure natural gases containing small quantities of liquids will be demonstrated. The second part of the paper has been prepared at the request of the Technical Committee of the High-Pressure-Gas Division of the Natural Gasoline Association of America. It recommends standard procedures for obtaining orifice correction factors to account for the deviation of gases from ideal gas laws at high pressures. The problem of metering gases containing a small proportion of liquid phase is discussed.

Multicomponent Distillation—C. D. Shiah. *Refiner*, June, 1942, pp. 76-78. A new graphical method is presented by which the curve of Q/D vs. the number of theoretical plates, sufficiently accurate for cost estimations, can be obtained when one set of rigid or approximate stepwise calculation data is available. This method makes use of the fact that the function of a multicomponent distillation is the separation of a complex mixture into two fractions. Thus any complex mixture can be considered as a binary mixture of the two fractions to be separated. An equilibrium curve can thus be drawn from the stepwise concentration gradient data. McCabe and Thiele's method can then be applied to determine the minimum reflux ratio, minimum number of plates, and number of plates at any reflux ratio.

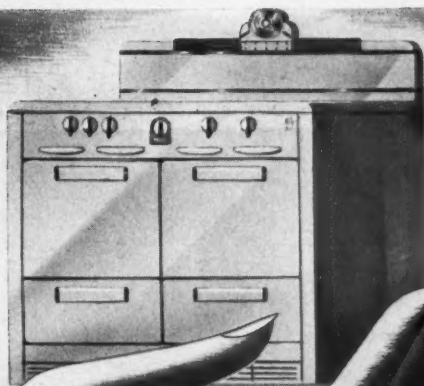
Code for Pressure Piping—L. Skog. *Heating, Piping and Air Conditioning*, June, 1942, pp. 357-360. Section 6, fabrication details (continued).

Electrical Charges Produced by Flowing Gasoline—S. S. Mackeown and V. Wouk. *Industrial and Engineering Chemistry*, June, 1942, pp. 659-664. The flowing of gasoline in pipes generates static electrical charges which are sometimes capable of producing a spark that may ignite a combustible mixture of gasoline vapor and air. Although suitable precautions have been taken in the oil industry to prevent the accumulation of these charges and eliminate the hazard due to an electric spark, very little is known regarding the magnitude of the charges. This work was undertaken to determine the magnitude of electrical charges which can be produced in the handling of gasoline. Measurements have been made on charges produced when gasoline is pumped from a filling rack to a tank truck, when the truck unloads at a service station, and when an automobile receives gasoline at a service station. These measurements were made under normal operating conditions. Abnormally large amounts of moisture in the gasoline might alter the results.

Evaluation of Synthetic vs. Natural Rubber—C. E. Stentz. *California Oil World*, 2nd June issue, 1942, pp. 17-19. Author discusses the properties of natural rubber, and then lists the various synthetics, giving their properties.

Our Synthetic Rubber Prospects and the Need for Immediate Recognition-Action—Andrew Tomlin. *California Oil World*, 2nd June issue, 1942, pp. 14-16.

Synthetic Rubber—A Bibliography. *Petroleum Engineer*, June, 1942, pp. 45, etc. Reference list for those interested in doing research reading on this important and timely subject.



Tell her to

HANDLE WITH CARE

An important job you can do today is to point out how to make gas appliances last longer. Take Roper gas ranges. They're well-built, sturdy, dependable. Reasonable care will see them through with flying colors — will make them last until those new Roper gas ranges will be available after the war.

Distribution of the Roper "Care and Operation" booklet will build up good will among your customers and future prospects. Write for Free sample copy today.

ROPER  **GAS RANGES**
CERTIFIED PERFORMANCE

GEO. D. ROPER
CORPORATION

GENERAL SALES OFFICE AND PLANT: ROCKFORD, ILLINOIS

BUY WAR BONDS

Roper Gas Ranges For All Type Gases Including (LP) Liquefied Petroleum Gas



CARE and OPERATION
of the new
ROPER GAS RANGE

A LETTER TO YOU

GENERAL INSTRUCTIONS

FOR ALL RANGE MODELS

INCLUDING: BURNERS

OTHER OPERATING INSTRUCTIONS

TEST CHARTS — LEAK

TEST TO BE MADE WITH GAS

PROPER BURNER INSTRUCTIONS

OTHER GENERAL INSTRUCTIONS

JANUARY-1943

49



Random Shots At The Parade

By W. W. BANKS

As we begin the New Year, I'm reminded of that popular song, "There's going to be some changes made." Yes, there will be changes in our industry, too . . . we know that . . . we expect it.



No, we don't know all the answers, but we know that the future of the industry lies ahead. We are already thinking of the Big Job that's coming . . . we're already thinking and planning . . . we're studying to keep up with the newest engineering ideas to be incorporated into our products.

Well, what changes? Since we are not blessed with guaranteed powers of prophesy we cannot begin to predict. We believe, however, that we should not fail to see the forest on account of the trees. We can attempt, in a small measure, to forecast the future by the past.

In line with our avowed policies of maintaining the best facilities possible, we are happy to announce that we have occupied our new building and our greatly expanded facilities will be used to better serve our country and our customers.

As time goes on, perhaps before peace comes, certainly afterwards, we shall see new uses for Butane . . . we shall have vastly improved equipment and appliances. We are still in the "horse and buggy days" of the Butane business . . . we are still a youngster with growing pains . . . quite a robust fellow, of course, but still we have not arrived.

In closing, one other thought . . . buy all the War Bonds you possibly can and encourage your employees to buy them. Our Government needs the money!

DALLAS TANK
AND
WELDING COMPANY, INC.
201-5 W. COMMERCE ST. DALLAS, TEXAS

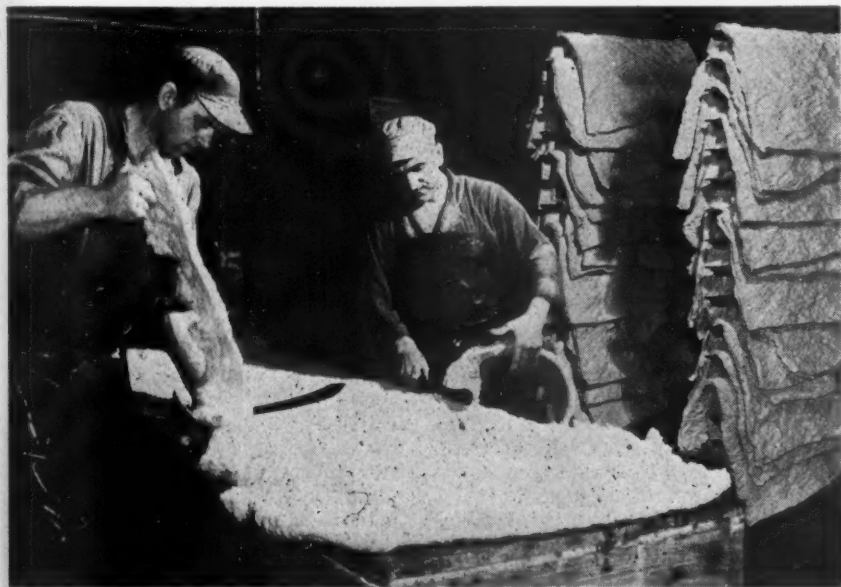
More Hydrocarbons Needed For Critical War Products

IN a special off-the-record meeting held in the Palmer House, Chicago, Nov. 10, during a lull in the A.P.I. meeting being held in the same hotel, executives and technical men of the Natural Gasoline Association of America discussed broadened participation in the war program and possible changes in production technique, according to Wm. F. Lowe, secretary of the Association.

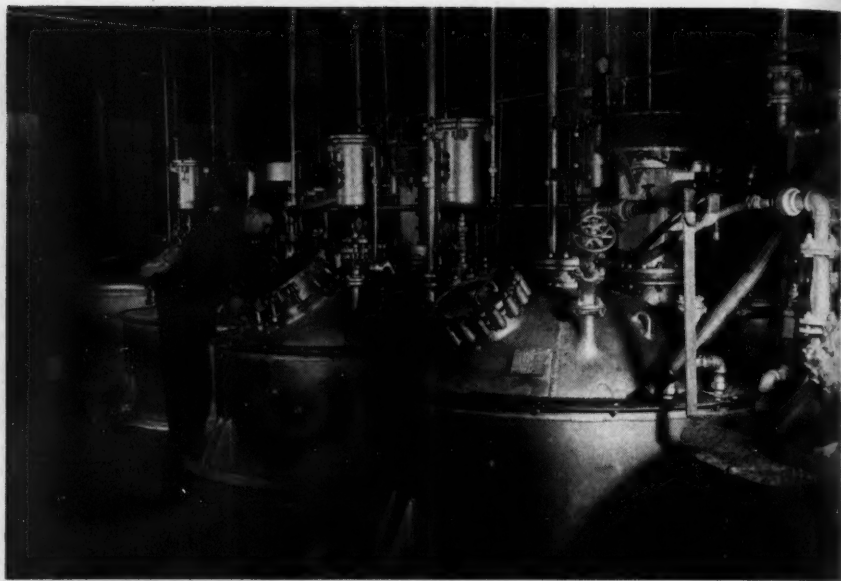
The meeting took the form of an "Information Please" program with a panel of process and construction experts answering written questions submitted by the industry. The "Clif-

ton Fadiman" of the session was T. R. Goebel, Shell Oil Co., Inc., Houston, who was assisted by Dr. G. G. Brown, University of Michigan, and C. R. Williams, The Chicago Corp., Corpus Christi, Texas.

The panel of experts consisted of A. J. L. Hutchinson, Fluor Corp.; Harold Vagtborg, Institute of Gas Technology; E. R. Smoley, V. Mekler and V. O. Bowles, of the Lumnus Co.; Louis Weiss and Henry Wade, of Stearns-Roger Mfg. Co.; Gustav Egloff, Louis S. Kassel, J. McAfer and J. F. Walter, of Universal Oil Products Co.



This is the cutting and trimming table where newly rolled sheets of synthetic rubber are cut to size for the drying pans. (Office of War Information photo, by Palmer.)



These are polymerizer tanks, which convert the raw materials of synthetic rubber into laytex. Each of these tanks at a B. F. Goodrich plant has a capacity of about one ton of laytex daily. (Office of War Information photo, by Palmer.)

Presenting the needs of the war program were representatives of the OPC, Natural Gas and Natural Gasoline Division, E. Holley Poe, director; P. M. Raigorodsky, assistant director, and James E. Pew, chief of the natural gasoline section.

The broad question before the meeting was concerned with the best means for stimulating production of the hydrocarbons in the paraffin group most useful in the manufacture of critical war products. With the knowledge that it is one of the chief and most easily available sources of butane, isobutane and isopentane, the industry was seeking information on the best mechanical and economic routes to increase that production. There is full realization that many small plants are not equipped to isolate the individual hydrocarbons but

might be changed with the addition of a small amount of critical material to make a 40-lb. product which could be split as needed by manufacturers of rubber and aviation fuel. There is also the definite possibility that many plants, with greater facilities and the addition of some equipment, could extract the individual hydrocarbons for marketing as pure raw material for blending or processing to synthetics. Between these two extremes of plant utility are many feasible and practical variations and the entire range was covered in the questions submitted.

Answers of the process experts to these questions and the open forum discussion of them led to several general conclusions of value to the industry. Beginning with the acknowledged fact that isobutane is currently



BUTANE *is Faster* Because *it's* **HOTTER!**

"If you want to do something for your accounts who are engaged in the war effort, for your country, and yourself, sell them on the idea of using Ransome Butane Torches and Burners. Butane throws a hotter flame than any other commercial fuel, it is clean and odorless, and cuts the production time on lots of jobs in half." That is the message the Ransome man is telling dealers and distributors everywhere. For any shop application, or any commercial heating job, ask us about the advantages of using Butane.

RANSOME COMPANY

Designing and Constructing Engineers

4030 HOLLIS STREET • EMERYVILLE, CALIFORNIA

Ransome

the most critically needed hydrocarbon in the paraffin group due to war demands, it was concluded this demand would increase rather than diminish for several years to come and that there would be a wide market for it in the post-war era. Every effort should be made to increase isobutane yield by improving the yield of total butanes but isomerization plants are not feasible at natural gasoline plants having a production of less than 50,000 gal. per day. Central isomerization or alkylation plants fed by the production of several natural gasoline plants are considered a definite possibility.

◆ ◆ Interpretation Given For Safety Equipment Order

An interpretation of Limitation Order L-114, which governs the use of critical materials in the manufacture of various types of safety equip-

ment, was issued Sept. 25 by the Director General for Operations to clarify the kinds of measuring and indicating instruments which are subject to its terms.

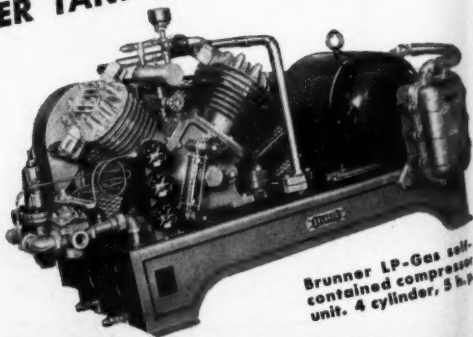
Order L-114, the interpretation stated, covers only the types of measuring and indicating instruments used to promote safety or to prevent or reduce accidents, injuries, occupational hazards or diseases. Instruments of this type, for example, are used to detect gases or dangerous substances, the unknown presence of which might lead to explosions or other hazards.

Measuring and indicating instruments used in industrial processes, such as control valves, temperature bulbs, thermocouples and other highly technical instruments, are covered by Limitation Order L-134, which restricts the use of chromium, nickel and their alloys to specified operating conditions.

ARE YOU LOSING 500 to 1000 lbs. LP-Gas Vapors PER TANK CAR UNLOADED?

Many LP-Gas operators are losing 500 to 1000 lbs. of liquid petroleum gas because they can't recover all the gas vapors in tank car unloading. You can get these additional vapors by using the Brunner LP-Gas compressor unit. These vapor savings will quickly pay for the Brunner unit. Besides, the Brunner compressor will reduce the time required for unloading and speed up bottle filling by as much as 25%. Brunner Manufacturing Company, Utica, New York, U. S. A.

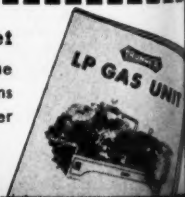
BRUNNER
FOR OVER 30 YEARS THE SYMBOL OF QUALITY



Brunner LP-Gas self-contained compressor unit. 4 cylinder, 5 h.p.

Write for FREE Booklet

The new booklet describes the Brunner LP-Gas Unit, contains illustrations, diagrams and other pertinent facts on handling liquid petroleum gas.



L. W. Hutchins Will Be Chief In Fire Defense Activities

L. W. Hutchins, president of Sheldon, Morse, Hutchins & Easton, Inc., and director of Safety Research Institute, Inc., of New York City, has been appointed chief of the newly organized education unit in the fire defense section of the U. S. Office of Civilian Defense.

The function of this unit in the OCD will be to direct public education on fire defense. It will also serve as a coordinating agency in matters of fire defense between the various OCD divisions and between the OCD and other government agencies.

As Director of Safety Research Institute, which is active in fire protection education, Mr. Hutchins has been closely associated with the fire safety field for a number of years.

Petroleum Administration Reorganized by President

In an effort to centralize war policies and actions of the government relating to petroleum, President Roosevelt announced on Dec. 2 the establishment of a new agency, Petroleum Administration for War, with Harold L. Ickes as its head. The new office supplants the former Office of Petroleum Coordinator for War which Secretary of Interior Ickes had headed since its inception May 28, 1941. Ralph K. Davies, who has been deputy coordinator, was appointed deputy petroleum administrator in the new set-up.

According to the executive order, Petroleum Administrator Ickes "shall be directly responsible to the President and shall establish basic policies and formulate plans and programs to assure for the prosecution of the war and conservation and most effective development and utilization of petroleum in the United States and its

territories and possessions, and issue necessary policy and operating directions." This is a broader delegation of war authority than the pre-war responsibility vested in Mr. Ickes as petroleum coordinator which was that he "make specific recommendation to appropriate departments."

The new office will wield a strong influence on the WPB, OPA, and ODT, and although it will not have the power to usurp their functions, it may issue and enforce necessary orders and directives regulating all the operations of the petroleum industry. The administrator will also be empowered to distribute among the companies engaged in the oil industry whatever quantities of critical materials are allotted for the use of the industry by the WPB.

Lessees of Commercial Trucks Must Have Certificates

After Dec. 1, anyone who leases a Commercial Motor Vehicle from another person "for a period of seven or more consecutive days" (a "lessee") must obtain a Certificate of War Necessity to operate the leased vehicle, the Office of Defense Transportation has announced.

A 10-day grace period will be allowed the lessee in which to apply for his Certificate.

The phrase "leased for seven or more consecutive days" is construed by the ODT to include also a combination of separate leases which may be made by a person to cover operations of seven or more consecutive days.

A person who leases a commercial motor vehicle from another under separate leases with short breaks in the period between leases, will also be considered as operating under a lease arrangement of seven or more consecutive days, the ODT said.

F. R. Fetherston, LPGA Secretary Enters Military Service

Frank R. Fetherston, for many years executive secretary of the national Liquefied Petroleum Gas Association, has been granted a leave of absence by the board of directors of the Association so that he may reenter military service. Commissioned as a major in the U. S. Army, he has been ordered to Washington, D. C., to assume duties with the Resources Division, Service of Supply.



F. R. FETHERSTON

During World War I he entered the service in the enlisted ranks and was subsequently commissioned a lieutenant of field artillery, retaining a commission in the Field Artillery Reserve Corps until 1934.

Since the present war broke out, Mr. Fetherston has spent much of his time in the Washington office of the Association in order to assist the LP-Gas industry in presenting its problems and needs to the War Production Board during periods when orders were being formulated affecting the industry.

Miss Florence Jacob, Mr. Fetherston's assistant in the past, has now been appointed acting secretary and acting treasurer of the Association.

A. F. Millikan, American Stove Official, Passes Away

A. F. Millikan, vice president and member of the board of directors and executive council of the American Stove Co., Chicago, passed away Oct. 10 at the age of 76. Mr. Milli-

kan, who had been with the company for nearly 50 years, served the company also as manager of the Northern Sales Division.

He is survived by his brother, Dr. Robert A. Millikan, chairman of the executive committee, California Institute of Technology, Pasadena, and by his son, E. P. Millikan, manager, Pacific Coast Sales Division, American Stove Co.

WPB Urges Dealers and Consumers to Fill Storage

To guard against winter shortages of butane and propane gas when consumption of these fuels is at its peak, chiefs of the liquefied petroleum gas and equipment units of the armed services and the War Production Board are taking joint action to build up reserves of these fuels on the premises of consumers.

"We are anxious that steps be taken without delay by all consumers of liquified petroleum gas to put their empty capacity to use, if they have not already done so," said P. K. Thompson, chief of WPB's Liquefied Petroleum Gas Equipment Unit.

The public is asked to cooperate with the armed services by filling all available storage facilities now, he announced, so that total reserves of butane and propane gases may be sufficient to provide for civilian needs during the winter without unnecessary interruptions of deliveries for military and industrial purposes.

Requirements of the army, navy, shipyards and war industries for these fuels are taxing the facilities of refineries and bulk distributors.

The seasonal peak in transportation of butane and propane gas comes during the three winter months. Approximately 50% of all butane is usually marketed during the months of December, January and February.

BUTANE-PROPANE News



AS of today, in more than 20,000 firms of all sizes have reached the "Honor Roll" goal of at least 10% of the gross payroll in War Bonds. This is a glorious testimony to the voluntary American way of facing emergencies.

But there is still more to be done. By January 1st, 1943, the Treasury hopes to raise the present total of 20,000,000 employees investing an average of 8% of earnings

to 30,000,000 investing at least 10% of earnings in War Bonds.

You are urged to set your own sights accordingly and to do all in your power to start the new year on the Roll of Honor appearing in the "Payroll Savings News." For copy write War Savings Staff, Treasury Department, Washington, D. C.

TIME IS SHORT. Our country is counting on you to

**"TOP THAT 10%
BY NEW YEAR'S"**



Save with

War Savings Bonds

This space is a contribution to America's All-Out War Effort by

BUTANE-PROPANE News

ANSWERS

To Chapter 16 The Bottled Gas Manual

Here are the answers to the questions on Page 42 and which refer to problems in Chapter 16 of THE BOTTLED GAS MANUAL:

1. Its very nature makes the customer feel that you are taking a personal interest in his problem.
2. Its principle is that heat rises and never travels downward unless it is forced that way. By installing a heat trap the circulation of hot water in the pipes is stopped at the highest point in the trap.

*For Safety
and Economy*

ETHYL MERCAPTAN

—Purified—

The ACCEPTED
standard
odorant
for liquefied
petroleum
gases.

**MALLINCKRODT
CHEMICAL WORKS**

ST. LOUIS

NEW YORK

3. A. Recirculation through the auxiliary unit with high heat losses.
- B. Damage to the automatic storage water heater by excessively high temperatures.
4. When by so doing the temperature differential between the cold and hot water can be appreciably reduced.
5. $90 - 60 = 30$ $\frac{30}{90} = 33\frac{1}{3}\%$
 $33\frac{1}{3}\%$ of \$5 = \$1.66 $\frac{2}{3}$.
6. A broken or missing dip pipe.
7. An overloaded water heater.
8. Increase the burner input if possible.
9. To cut down heat losses in the hot water lines.
10. Because it is probably rated at 60° temperature rise whereas the job on which you are figuring may call for a higher temperature rise with consequently less recovery in gallons per hour.



First Tire Inspection For Trucks by Jan. 15

The first tire inspections under General Order ODT No. 21, requiring all commercial motor vehicles to carry Certificates of War Necessity, must be made by Jan. 15.

The order as originally issued would have made it necessary for operators affected by the order to take their vehicles in for tire inspection before Nov. 15, when the order went into effect. The amendment makes an initial inspection mandatory before Jan. 15.

BUTANE-PROPANE News



● *Essential civilian oven users may now purchase new Blodgett Ovens under Order L-182.*

oven-baked foods get nod on national nutrition program

HERE ARE FACTS YOUR CUSTOMERS SHOULD KNOW:

Modern nutritional menus, keyed to war-time demands, show a strong predominance of baked and roasted dishes. For domestic or mass-feeding, food—entree, vegetable and dessert, is adjudged better when oven-cooked.

These menus, recommended by the national program, are high in nutritional value—and prevent waste of vitamin content, food volume and fuel.

THE G. S. BLODGETT CO., INC.
53 Maple Street Burlington, Vermont

YESTERDAY

Payneheat
for the
homes of
America.

TODAY

Precision
parts for
the arms of
Democracy.

TOMORROW

Still finer
furnaces for the
gas industry's
post-war
expansion.

PAYNEHEAT

Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

JANUARY-1943

59

Home-Gas Co. Officials Have Joined Armed Forces

According to Gordon Beaton, who is now directing the activities of the Home-Gas Co., Minneapolis, Francis McCahill, formerly an official of the company, is now a lieutenant, senior grade, in the U. S. Navy and is quartered on the Galapagos Islands in the South Pacific.

Gene McCahill, also a senior grade lieutenant in the navy, is located in Washington, D. C., and Harold Anderson, of the company, has reported for army duty.

No Furnace Manufacturing Allowed After Dec. 31

No steel furnaces for civilian use can be manufactured after Dec. 31, 1942, according to Supplementary General Limitation Order L-22-a-(a), issued Dec. 14 by the War Production Board, except as specially author-

ized by the Director General for Operations on Form PD-704.

After the same date there shall be no manufacture of parts for steel furnaces in any calendar quarter of a greater weight of iron and steel than 200% of the weight of such iron and steel as was used during the corresponding quarter of 1940.

American Stove Completes Conversion to War Work

The complete facilities of the American Stove Co., St. Louis, are now turned over to war production. When the last stove come off the company's line in late July, Arthur Stockstrom, president, announced that "the duration conversion" was completed.

New buildings have been erected and new machinery installed to handle the manufacture of war instruments which include thousands of airplane flares.



Lieutenant-Commander Cashin pins "E" button on lapel of Lucius Parker, oldest employe of the Brunner Manufacturing Co., Utica, N. Y., as George L. Brunner, Sr., president of the company looks on.

How to make a **BETTER PROPANE TANK**

• *You can* — with the help of your fabricator!

• But, your fabricator should be chosen very carefully for his *specialized knowledge of design and construction of tanks for propane storage*. For, the safety and enduring quality of your fabrication depends on his specifications for materials, and upon his choice of procedure for handling them!



DOWNTOWN IRON WORKS
DOWNTOWN, PA.

WELDED and RIVETED PRODUCTS

• Remember that; wide experience, such as Downtown can offer, is a first essential to propane work . . . and, you'll find it a time-saving, money-saving asset, as well.

PROPANE TANKS FOR UNDERGROUND OR ABOVE-GROUND STORAGE

For Greater STABILITY

IN DEHYDRATED BUTANE AND PROPANE

A Higher Quality Product A More Dependable Source of Supply A Product that will secure for you a list of customers more satisfied with a fuel giving trouble-free and efficient service try Carter Propane and Butane.

Write for complete information to: The Carter Oil Company, Marketing Department, Room 928, National Bank of Tulsa Building, Tulsa, Oklahoma.

DEHYDRATED
Propane and Butane

THE CARTER OIL COMPANY

TULSA, OKLAHOMA

Shipping Points: Seminole, Okla., Stonewall, Okla., St. Elmo, Ill.
WHOLESALE ONLY!

ACCURATE CONTROL



ALWAYS— WITH **KEROTEST** PROPANE-BUTANE CYLINDER VALVES

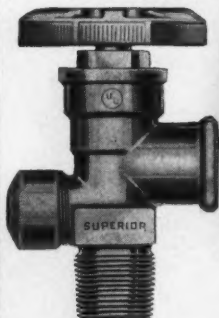
Users like the dependable, accurate control of all **KEROTEST** Propane-Butane Cylinder Valves. Safe and durable—safety vent releases only excess pressure. Patented diaphragm packless valve.

KEROTEST

KEROTEST

MANUFACTURING CO.
PITTSBURGH, PA.

Superior LP-GAS CYLINDER VALVES



Listed as
Standard
and for
Re-examination Service
By
Underwriters'
Laboratories



Write for
Bulletin LP-8
For details on

cylinder valves; and valves and accessories for bulk stations; above and below ground installations.

SUPERIOR VALVE & FITTINGS CO.

1509 WEST LIBERTY AVENUE
PITTSBURGH, PENNSYLVANIA

More Gas For "Essential" Traveling Salesmen

The Office of Price Administration announced Dec. 5 a modification of its mileage rationing regulations at the request of Rubber Director William M. Jeffers, to grant additional gasoline rations to traveling salesmen.

While details are not fully worked out, the change in the mileage rationing regulations will give these salesmen up to 65% of their last year's mileage, or a total of 8600 miles a year, whichever is less.

Salesmen, who will become eligible for more than 470 occupational miles a month, will be limited to those engaged fulltime in the sale of necessary productive equipment for farms, factories, mines, oil wells, lumber camps and similar productive or extractive establishments, or of essential food, shelter, fuel, clothing and medical supplies.

OPA War Price and Rationing Boards will be ready to receive applications for rations to provide for these additional miles after Jan. 1.



Booklet Explaining Rationing Is Available to Public

America's rationing program—what it is, why the Government is forced to ration goods, what makes certain commodities scarce, how things are rationed—is the subject of a pamphlet released today by the Office of Price Administration.

The pamphlet is a simple explanation to the public of the important role played by rationing in the wartime life of this nation.

"Rationing, Why and How," is a revised and illustrated edition of a former OPA publication. Copies may be obtained from all Regional and State offices of OPA.

REZNOR

GAS FIRED UNIT HEATERS FOR INDUSTRY

SINCE GAS is used for fuel, Reznor Unit Heaters are self-contained heating plants. You may install this type system more quickly than any other, **THUS SAVING 89% IN VITAL, HARD-TO-GET MATERIALS.** Operating from a suspended position, Reznor Units deliver more heat over wider areas, due to Reznor's special heat exchanger tubes. Write today.

REZNOR MANUFACTURING COMPANY
304 James Street • Mercer, Pennsylvania

"GAS HEATERS EXCLUSIVELY SINCE 1888"

THEY MAY BE INSTALLED
QUICKLY AND YOU GET
LOTS OF HEAT . . .



ALL SEAMS DOUBLE WELDED

American Welded Pressure Tanks are designed especially for exceptionally high pressure service and are widely used in connection with high octane plants on which high priorities can be obtained.

The knowledge, skill and experience of American Engineers, plus fine materials, is your assurance of safe, dependable storage and maximum economy. All seams and connections are double welded, outside AND INSIDE, insuring an absolute leakproof container.

Your inquiries regarding present and future storage problems are cordially invited.

AMERICAN PIPE & STEEL CORPORATION
Manufacturers and Distributors
Alhambra, California

WELDED PRESSURE TANKS

**SAFE
DEPENDABLE
and
ECONOMICAL**

Underground Gas Storage Approved In California

Federal governmental agencies have recently approved the underground storage of natural gas in the exhausted oil field at Playa del Rey near Los Angeles to serve as a standby reservoir for peak load days in Southern California. Work has already commenced on the laying of inter-connecting pipe lines and installation of the compressors.

The field will be taken over immediately by the Defense Plant Corp., according to the arrangements completed in Washington. The Southern California Gas Co., Los Angeles, has been appointed by the Federal government as the operating agency to store the surplus natural gas in the field and withdraw it as required. The San Joaquin Valley, Ventura and Los Angeles oil and gas fields supply this gas.

The California Commission, composed of Richard Sachse, a member of the California Railroad Commission, and Roy A. Wehe, gas and electric engineer for the Commission, sponsored the majority of the preliminary work from which the conservation plan was finally accomplished.

It is estimated that between two and four billion cu. ft. of gas can be stored in the basin eventually, permitting withdrawal of about 25 million cu. ft. daily. It is expected that the gas will be enriched by hydrocarbon vapors as it is again withdrawn.



Commercial Shearing and Stamping Issues New Booklet

The Commercial Shearing and Stamping Co., of Youngstown, Ohio, has recently published "Section No. 4," a new booklet on its standard steel shapes. Its purpose is to bring to the attention of purchasing agents and design engineers a number of stand-

ard steel shapes that can be purchased as production items, without die or tool changes.

Even firms having machinery for forming and pressing steel will often find it of advantage to buy required parts on the outside when they can be obtained as standard items, and this booklet presents specifications for 14 such shapes.

The Commercial Shearing and Stamping Co. specializes in the cold forming and working of steel from 18 gage to a thickness of ½ in. and manufactures steel parts for all industries, but making no finished units in competition with any industry.

"Section No. 4," vividly illustrated in blue, is available free of cost upon request.



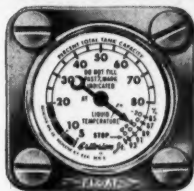
Servel Staff Holds Annual Conference

Meeting to discuss plans for further contributions to the war effort, more than 100 field and staff members of Servel, Inc., attended the company's annual conference in Evansville, Ind., on Oct. 12-14. George S. Jones, Jr., vice president and general sales manager, presided over the three-day session.

A highlight of the sessions was a full day seminary on Servel's Nutrition in Industry campaign which was conducted by Robert J. Caniff, advertising and sales promotion manager.

When Prescott B. Wiske, service manager, addressed the conference he told them that the two million Servel gas refrigerators now in operation in the United States and Canada will receive the best possible maintenance care for the duration.

Louis Ruthenburg, president of Servel, was the speaker at a special joint session on the second night of the conference at which 200 members of the factory supervisory staff were present.



LONG WILL THEY SERVE!

... that's because Rochester Gauges are carefully designed and durably built to serve with greater accuracy and dependability throughout the present emergency.

ROCHESTER MFG. CO., INC.
17 Rockwood St., Rochester, N. Y.

ROCHESTER
Criterion GAUGES

A.V.* ?



After Victory is ours we must win the peace that we have fought for and won. This will call for new modes of living—and Peerless is preparing now through our research development program. Our engineers are designing and testing new designs of liquefied gas heaters. Our new products will be startling and different.

* MEANS AFTER VICTORY

PEERLESS
MANUFACTURING CORPORATION
INCORPORATED
LOUISVILLE • KENTUCKY



FLORENCE has enlisted for the duration. To our Army and Navy the name Florence means increasing war production as thirty million dollars' worth of stove and heater production capacity serves America's growing war might.

To Mrs. America, Florence still means Better Looking, Better Cooking, Less Work. The Florence L-P Gas Ranges now in service will continue to create more good word-of-mouth advertising that will make your selling job easier when the war job is done.



★
After Victory will come new Florence L-P Gas Ranges. Into them will go all our pre-war skill plus all that the war production drive is teaching us today.

**FLORENCE
GAS RANGES**
For L-P Gas

BACKED BY 70 YEARS' EXPERIENCE

FLORENCE STOVE COMPANY
Gardner, Mass.; Kankakee, Ill.; 1458-59
Merchandise Mart, Chicago; 45 E. 17th St.,
New York; 53 Alabama St., S.W., Atlanta;
301 N. Market Street, Dallas.

Order These Famous L. P. Gas
Products From Us



BASTIAN-BLESSING

THE DAYTON-DOWD CO.

Hackney

BUTANE, PROPANE CYLINDERS

L.C. RONEY INC.

**The IMPERIAL
BRASS MFG. CO.**

GAS EQUIPMENT CO., INC.

2620 South Ervay Street, Dallas, Texas

GAS EQUIPMENT SUPPLY CO.



L.C. RONEY, INC.

meets the demands of the nation. Our plant has gone to war for the duration—but when peace comes, L. C. RONEY products for the LP-Gas industry will meet the demands of dealers everywhere. In the meantime—our stock of LP-Gas equipment is still complete.

L.C. RONEY INC.
1740 44th St. - LOS ANGELES, CALIF.

Philgas Moves General Offices To Bartlesville, Okla.

The general offices of Philgas Division, Phillips Petroleum Co., were moved Dec. 11 from the General Motors Bldg., Detroit, to Phillips' principal operating offices at Bartlesville, Okla.

"The new location will permit closer correlation of policy and operating problems, which is necessary under war conditions," said Frank Phillips, chairman, and K. S. Adams, president of Phillips Petroleum Co., in announcing the move. So far as the move affects the customers and suppliers, it is merely a change of mailing address. Essentially the same key personnel will be at the new location, and no changes in operating methods are involved.

The Detroit tank car section of Philgas Division will continue the present district sales and service office in Detroit. It is under the direction of W. F. DeVoe.



Pacific Coast Officers, LPGA, Re-Elected for Another Year

All officers of the Pacific Coast Section, LPGA, will serve a second term—1943-1944—as the result of the nominating committee's action on Dec. 11 in Los Angeles.

These officials are: Chairman W. T. Joplin, and Vice Chairmen C. M. Ambrose, Pacific-Northwest District; W. B. May, San Francisco-Sacramento-Stockton District; Don West, San Joaquin Valley District, and Harry Horn, Southern California-Arizona District.

While the membership has the privilege of voting by mail ballot, the committee selections are tantamount to election.

The nominating committee is composed of Chas. McCartney, J. S. Fagan and Harry Horn.

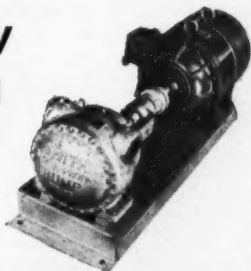
Greetings to
BRILLIANT FIRE
 GAS HEATER
DEALERS
 EVERYWHERE

May we be favored with and deserving of your splendid cooperative patronage in the future as in the past.

**The OHIO FOUNDRY
 & MANUFACTURING CO.**

"Quality Heating Equipment Since 1846"
STEUBENVILLE, OHIO

New
 Model
210



SMITH PUMPS

meets every requirement. The balanced gear construction of SMITH Butane-Propane PUMPS reduces internal wear. Fluid sealed packing box makes hazardous gas leaks impossible.

Order Model 211 for truck mounting.

SMITH Precision Products COMPANY
 135 MISSION ST. • SOUTH PASADENA, CALIF.



**OUR WAR JOB
 INCLUDES SUPPLYING
 SINCLAIR
 LP-GASES**

This all-out global war, with its mechanical monsters of destruction and great facilities for mass production, has found a thousand new uses for Sinclair LP-Gas; on the military, industrial and domestic front. Its uses include:

**100 OCTANE
 AVIATION GASOLINE
 SYNTHETIC RUBBER
 PRODUCTION
 POWER HEAT FUEL**

for tractors, tanks and trucks; for shipyards, power plants, chemical works, defense plants and war workers' homes.

Our Distributors are helping in this important task.

Protect your fuel requirements by contracting with

**SINCLAIR PRAIRIE
 OIL COMPANY**

Liquefied Petroleum Gas Division
 Sinclair Bldg. Tulsa, Okla.

L. C. Parker Named Member of Louisiana LP-Gas Commission

In compliance with a law passed by the state legislature in 1942, the Louisiana Liquefied Petroleum Gas Commission has been organized and is functioning in its supervision and regulation of the industry.

The members of the commission are L. C. Parker, former executive secretary and attorney of the Louisiana Liquefied Petroleum Gas Association, and elected by the association to represent it on the commission; Oscar C. Butler, chairman; and Secretary of State and Insurance Commissioner James C. Gremillion, secretary. W. U. Moss, of New Orleans, has been named director. Offices are located in the State Capitol Bldg., Baton Rouge.

Following Mr. Parker's resignation from office in the Association, Miss Bertha McDaniel was elected assistant secretary and she will have charge of the Association's office.



L. C. PARKER

Ernest H. Reed, Republic Heater Corp., Dies

Ernest Herbert Reed, president and owner of Republic Heater Corp., Huntington Park, Calif., passed away suddenly on Nov. 5 in Washington, D.C. He was apparently in good health when he left on a business trip to the capital, but after arrival in the East he collapsed and died.

Born in Montreal, Canada, 52 years ago, Mr. Reed came to California in 1926 and set up a novelty toy business. Fifteen years ago he entered

the water heater business and had been president of the Republic Heater Corp. since that time. His son, Whitney Reed, is vice president.

Utility Services Not Subject To Charge Changes

In a manual containing digests of interpretations relating to services, issued by the Office of Price Administration, industry is reminded that if a public utility made no charge for a certain service in March, 1942, and continues to supply the service to those purchasing gas or electricity, no charge may be made for that service.

It is ruled that a portion of the utility rate was the price for the service or that the seller was being otherwise compensated through the purchase of gas or electricity.

The service may be abandoned, but in such instance it would constitute a violation of the maximum price regulation. It also applies to appliance services.

Director of Robertshaw Research Laboratory to Serve WPB

S. G. Eskin, Director of the Robertshaw Research Laboratory, has received his formal appointment from Donald M. Nelson to serve as a "dollar-a-year" man on the War Production Board. Mr. Eskin has been assigned to the Industrial Conservation section headed by Lessing Rosenwald and in the Specifications Branch.

Charles K. Strobel has been appointed assistant director of the Robertshaw Research Laboratory to carry on the comprehensive research program under way. Mr. Strobel became a member of the Robertshaw Thermostat Co.'s Research Laboratory in September, 1940.

SPRAGUE METERS

for
PROPANE - BUTANE SERVICE

Write for Particulars

SPRAGUE METER COMPANY

Bridgeport, Conn.
Los Angeles, Calif.
San Francisco, Calif.

McNAMAR *Tanks*

- TRUCK TANKS
- TRANSPORTS
- SKID TANKS
- STORAGE TANKS
- UNDERGROUND SYSTEMS

All tanks ASME U-69, inspected by
Ocean Accident & Guarantee Corp., Ltd.

McNAMAR BOILER AND TANK COMPANY

Tulsa, Oklahoma

Salem, Illinois



*Keep 'Em
Brewing*

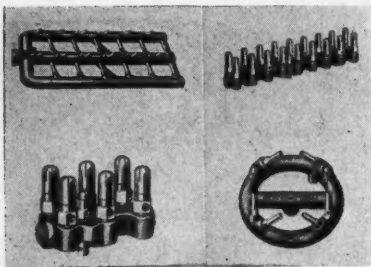
**CORRECT USE
OF GAS BURNERS
ASSURES EFFI-
CIENT OPERATION**

● YOUR CUSTOMERS will appreciate this information. It will help conserve their urns, save fuel for the war effort and build good-will for you. BLICKMAN coffee urns are noted for their excellence of construction and design. But even the finest of urns must be properly cared for.

1. Adjust air shutter of burner to get a steady, blue, quietly-burning flame. A yellow or wavy flame is inefficient. In fact, if there is ANY yellow in flame, combustion is not complete and gas is being wasted. Yellow flame is caused by incandescent carbon particles which collect on urn in form of soot.
2. Keep burner ports clear at all times. Flames should carry across and burn at all ports when gas is ignited at any one point. Inspect ports regularly and clean off any accumulations of dirt or foreign matter.
3. Be sure that all burners are installed at proper distance from bottom of urn. When gas is turned on full, flame should lick but not spread over bottom. Usually, correct distance of burner from bottom is approximately 1½" to 2" for smaller urns, and approximately 3" for larger models.

S. BLICKMAN, INC.

Manufacturers of Food Service Equipment
2101 Gregory Ave. • WEEHAWKEN, N. J.



BARBER Appliance Burners

We make many types of Burner Units to fit a wide range of gas appliances. Nearly 200 appliance makers use Barber Burners. All Barber units correctly designed and equipped with proper jets to suit the appliance. Barber is the ONE burner which assures complete combustion on Butane-Propane or ANY OTHER gas. Appliance builders and fuel distributors give their customers better service, more economy, by advising the use of Barber-equipped appliances. Submit your burner problems to us. Complete new Catalog on request.

THE BARBER GAS BURNER CO.
3704 Superior Ave. Cleveland, Ohio

HOT *Water* UNITED STATES

Automatic Water Heaters

Approved by A.G.A. for
Liquefied Petroleum Gas

United States Heater Co.
COMPTON, CALIFORNIA

NOW IN STOCK

Butane Manifolds (Thickstun)
Butane Mileage Meters
Butane Tank Fittings
Bu-Seal (Compound)
Fisher Domestic Regulators
Forster Burners and Torches

"Pioneers of the Butane Industry"

**ELECTRIC & CARBURETOR
ENGINEERING CO.**

2323 E. 8th St. Los Angeles

CLASSIFIED

Classified advertising is set in 6-point type, without border or display, at the rate of 10 cents per word per insertion; minimum charge per insertion \$2. Box numbers for replies count as 5 words. Count as a word each one letter word and each group of figures. Classified advertising is only accepted when payment accompanies order. Copy and payment must reach publisher's office prior to 10th of month preceding publication.

EQUIPMENT WANTED

ANY NUMBER OF NEW OR USED 100 LB. Propane gas I.C.C. cylinders. Anyone having this equipment for sale wire Smith's Electric Shop, Philip, S. D., collect.

Wm. S. Farish, Standard Oil Of New Jersey President, Dies

William Stamps Farish, president of the Standard Oil Co. of New Jersey, passed away Nov. 29 at the age of 61. He was ill only a few hours.

Mr. Farish has been directing the affairs of his company since 1937. He started his career in the petroleum industry at Beaumont, Texas, in 1901, shortly after graduating from the University of Mississippi. He became president of the American Petroleum Institute in 1926 and served as a director thereafter until his death.



No LP-Gas Rationing For Trucks in 18 States

The Office of Defense Transportation announced on Dec. 2 that motor fuels, other than gasoline, have not been rationed for trucks in 18 states. This applies to butane, propane and diesel oil and comes under ODT-21.

The open states are as follows: Oregon, California, Nevada, Idaho, Utah, Arizona, Montana, Wyoming, Colorado, New Mexico, Kansas, Oklahoma Texas, Arkansas, Louisiana, Mississippi, Tennessee, and Alabama.

ED

3-point
te rate
mini-
numbers
t as a
group
s only
order,
fisher's
ceding

100 LB.
e having
Electric

oil
Dies

resident
w Jer-
he age
hours,
ng the
37. He
roleum
n 1901,
m the
became
roleum
s a di-
th.

sporta-
motor
ve not
states.
ne and
DT-21.
ollows:
Idaho,
roming,
, Okla-
uisiana,
abama.

New

for the PERMANENT REPLACEMENT of STRATEGIC MATERIALS



CHEMICALLY RESISTANT TUBING AND FITTINGS BY HODGMAN

Saran Tubing by Hodgman is a tough thermoplastic specially made to replace strategic materials such as aluminum, stainless steel, nickel, copper, brass, tin and rubber. It is adaptable for use under high working and bursting pressures and is resistant to most chemicals. Its insulating qualities, flexibility and ease of handling make it extremely valuable in installations requiring the transport of oil, gas, air, water and corrosive chemicals... Flow type fittings of the same material make it possible to install a complete system with no more tools than a sharp knife and a flaring tool.

Send FOR DATA SHEET AND FREE SAMPLE.

Send FOR COMPLETE INFORMATION SHEET AND FREE SAMPLE

HODGMAN RUBBER CO.
FRAMINGHAM, MASS.

NEW YORK CHICAGO SAN FRANCISCO
170 Avenue 412 South Main St. 121 Second St.

BUTANE and PROPANE TANK HEADS

A.S.M.E. type
for the manufacturers of
BUTANE & PROPANE TANKS

***** STANDARD RADIUS *****
***** 80% RADIUS *****
***** ELLIPSOIDAL *****

DIAMETERS UP THROUGH 60"
THICKNESS UP THROUGH 1/2"

Write for Head Catalog

The COMMERCIAL SHEARING &
STAMPING COMPANY

YOUNGSTOWN, OHIO.

VIKING

... AN OLD-TIMER EVERY
NEWCOMER SHOULD KNOW

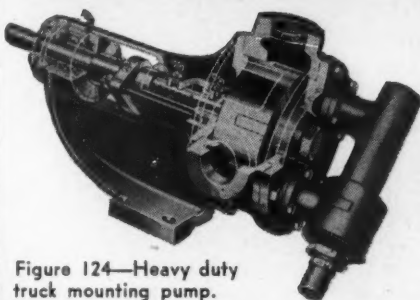


Figure 124—Heavy duty
truck mounting pump.

Specify VIKINGS for your rotary pump equipment and make sure of dependable, trouble-free service. That's the goal of every man, new or old, in today's big battle of production. More than a million Viking Rotary Pumps are delivering top-notch production on the toughest kinds of jobs all over the world today. That is the best testimonial to Viking's simple design with only two moving parts; to Viking's sturdy, high-quality construction. For complete information write today for a free copy of Bulletin 2302, which illustrates and describes Viking models, capacities, mounting styles and other specifications.

★ LEST YOU FORGET

When ordering pumps or parts it is necessary to give us your priority rating and allocations symbol. Be sure to obtain the highest rating possible. Priority regulations are changed frequently. Check up and see if changes made improve your rating. Thank you.

★
**VIKING PUMP
COMPANY**

CEDAR FALLS, IOWA

JANUARY-1943

71

ADVERTISERS

American Liquid Gas Corp.....	1	Mallinckrodt Chemical Works.....	58
American Meter Co.....	—	McNamar Boiler & Tank Co.....	69
American Pipe and Steel Corp.....	63	Merco Nordstrom Valve Co.....	—
Anchor Petroleum Co.....	8	Ohio Foundry & Manufacturing Co., The	67
Barber Gas Burner Co., The.....	70	Payne Furnace & Supply Co., Inc.....	59
Bastian-Blessing Co., The.....	36, 37	Peerless Manufacturing Corp.....	65
Blickman, Inc., S.....	69	Pittsburgh Equitable Meter Co.....	—
Blodgett Co., Inc., The G. S.....	59	Pressed Steel Tank Co.....	Second Cover
Brunner Manufacturing Co.....	54	Ransome Co.	53
Butane Co., The.....	—	Reliance Regulator Corp.....	3
Caloric Gas Stove Works.....	43	Reznor Manufacturing Co.....	63
Carter Oil Co., The.....	61	Robertshaw Thermostat Co.....	—
Commercial Shearing & Stamping Co., The	71	Rochester Manufacturing Co., Inc..	65
Dallas Tank & Welding Co., Inc.....	50	Roney, Inc., L. C.....	66
Downingtown Iron Works.....	61	Roper Corp., Geo. D.....	49
Electric & Carburetor Engrg. Co.....	70	Scaife Co.	Third Cover
Fisher Governor Co.....	45	Schoenberger Co., The W. J.....	—
Florence Stove Co.....	65	Sinclair Prairie Oil Co.....	67
Gas Equipment Co., Inc.....	66	Smith Meter Co.....	—
Gas Equipment Supply Co.....	66	Smith Precision Products Co.....	67
Grand Ranges, Division of Cleveland Co-Operative Stove Co.	Front Cover	Sprague Meter Co.....	69
HANDBOOK BUTANE-PROPANE GASES	40	Superior Valve & Fittings Co.....	62
Hodgman Rubber Co.....	71	Tokheim Oil Tank & Pump Co.....	Fourth Cover
Kerotest Manufacturing Co.....	62	United States Heater Co.....	70
		Viking Pump Co.....	71
		Warren Petroleum Corp.....	46

TODAY

**THE LONG LIFE AND
DEPENDABILITY OF**



SCAIFE

LP-GAS CYLINDERS

mean more to you than ever before



**SCAIFE
COMPANY**

**General Offices and Works:
OAKMONT
(Pittsburgh District), PA.**

*Representatives
in Principal Cities
Founded 1882*





Behind the portals of the Tokheim factory, wherever the eye may turn, is this challenge to Tokheim workers: "Can It Be Done Better?" Born in peace as an inspiration to fine workmanship, this homely challenge is given new and deeper meaning by the life and death struggle in which we are now engaged.

It becomes a summons to battle—a deadly serious summons, the answer to which may well determine the outcome of this

war. Victory will be assured only when we are ready to admit that, whatever we are doing, "it can be done better."

Tokheim has already accepted the challenge. Its workmen, hundreds of them, are daily suggesting better ways to perform numerous operations yesterday considered good enough. The entire organization is alert to the need as a victory essential. The tanks and guns and ships and planes in which the skill of Tokheim workmen has a part are better implements of war today because these men, and other thousands of Ameri-

can workers, have accepted the challenge and are "doing it better." Tokheim Oil Tank & Pump Company, Fort Wayne, Indiana.

**GENERAL PRODUCTS
DIVISION**

ALL OUT FOR VICTORY